

Thursday, January 13, 1983

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Unfair dismissal claim upheld

by John Riley
A SHEPHERD industrial tribunal last week upheld technical writer Jenny Wright's claim of unfair dismissal for trade union activity. She had been dismissed by BDP - but rejected the argument that the dismissal had been for trade union activity.

The tribunal decided that she had been made redundant but criticised BDP for the way in which this was carried out.

Its report concluded "because of the failure to consult, because of the way the dismissal was carried out and because of the failure to consider, let alone offer her alternative employment, the unanimous decision of the tribunal is that the company acted unreasonably."

The tribunal left the two parties to try to agree a remedy - reinstatement, re-engagement, or compensation - over a period of a

few weeks.

Wright's reaction was that she is: "Very pleased. It would have been better if we had got a ruling of unfair dismissal for trade union activity. We didn't quite prove the case although there was strong circumstantial evidence. The report was critical and we're sticking out for re-instatement."

The report hit out at EDP stating that "neither director was entirely credible as a witness for a variety of reasons," and the tribunal expressed "surprise that an employer which is engaged in marketing one of the most modern products in industry should deal with its employees in a manner rarely encountered since the concept of unfair dismissal was incorporated in an Act of Parliament."

ASTMS national organiser Tim Webb said: "This is one of the most scathing indictments I've

ever read from an Industrial Tribunal."

But Richard Jowitt, managing director of EDP, said that he is "delighted" with the decision. "It was a slap on the wrist for not observing proper procedure. This is a political dispute and with the question of law and interpretation being doubtful in this area, the union got off on the wrong horse to start with and they are at fault."

He continued, "I can't comment on my credibility because I gave evidence truthfully. Even though they accepted the appellant's evidence they found she wasn't dismissed for anything other than credible reasons."

The first hearing of 17 of the other EDP employees who struck in sympathy with Wright's dismissal, believing it to be because of her union activity, is on January 24. This will decide whether there is a case to answer.



WRIGHT... "Very pleased, but sticking out for re-instatement."

Philips and AT&T join in phone venture

by Donald Kennett
PHILIPS and AT&T International have confirmed their plans to set up a joint venture company to develop and sell digital public telephone exchanges.

An agreement in principle was signed last week under which a company owned equally by Philips and AT&T will tackle the world market outside the US from a base in Holland starting this autumn.

The base is likely to be at or near the Hilversum plant where Philips is developing its own digital public exchange, the PRXD. It will be run by staff from both companies.

Details of the new company such as its name and how much money will be put into it are to be discussed over the next couple of months. Studies will also be made on how far the co-operation between the two parents can be extended beyond the initial development and manufacture of AT&T products for the world market.

Transmission systems are the first likely extensions and the partners may consider taking Philips products to the UK market.

The partnership is AT&T's first major venture outside the US since it set up a London office late in 1981 to research overseas opportunities.

Philips has been pursuing numerous international partnerships such as one for joint research with Siemens in West Germany, another in optical fibre technology with M/A Cam in the US, another in cellular radio telephone systems with CIT-Alcatel in France and another in integrated circuit production for its Domestic Digital Bus with Intel in the US.

Lloyd's leasing case comes to court in US

by George Black
LLOYD'S of London must show that Federal Leasing was negligent in trying to return its returned IBM mainframes, if the underwriters are to escape paying \$550 million to the American firm.

The dispute came to court this week in Maryland. A total of 55 Lloyd's underwriting syndicates, led by E. F. Williams And Others, are cited in the 168-page complaint by the leasing firm based in Maclean, Virginia.

Seventeen insurance companies are also involved in the lawsuit. Federal is seeking \$500 million in punitive damages, \$50 million in compensatory damages and \$10 million for claims which it is alleged are outstanding.

The court will have to decide whether Federal Leasing exercised due diligence in avoiding trading losses and whether any claims are valid or whether Federal should repay any amounts which it has already received from Lloyd's.

A number of banks will also be watching the proceedings closely, as they were the original lenders to Federal.

Lloyd's defence will rest largely on the argument that Federal did

not try hard enough to re-lease the equipment. "One would expect any insured company to act as if it were not insured, in order to try and achieve profitability," said a Lloyd's spokesman.

The case stems from the rapid depreciation of some IBM mainframes, notably the 370 range, during 1979, when IBM introduced the 303X's and the 4300s.

The latter were outstandingly successful, to the extent that the 370s began to look obsolete.

The cornerstone of Lloyd's underwriting was an estimate of how fast the machines would lose in value. Under the special Lloyd's J policies, old machines were typically assigned residual values of 50% after three or four years; whereas the true value often turned out to be 25%.

The legal action began in June 1979. Lloyd's has been making interim payments to Federal since April 1980 to prevent it going bankrupt. Lloyd's had stopped making any such payments, but the US appeal court ordered it to resume and \$41 million worth of claims has already been paid over.

Inmos to get emergency govt cash

by Kevin Cahill
A MAJOR cash crisis at Inmos, the state-owned chip maker, has forced the government to consent to a substantial cash injection by the British Technology Group.

The crisis had become so acute that sources close to Inmos said that there was some doubt that the company would be able to meet the January payroll without immediate assistance.

The funds for Inmos, which are likely to be announced later this week or early next week, will consist of a limited amount of cash from the British Technology Group supported by government guarantees.

Despite the size of the funding most commentators see the measures as a stopgap pending the privatisation of Inmos, which has factories in Colorado in the US and at Newport in Wales.

The size of the crisis and the speed at which it developed took both the BTG and the Department of Industry by surprise.

At the Conservative Party conference in October, Industry Minister Patrick Jenkin had said that any further funding for Inmos must come from the private sector.

The BTG subsequently made it plain that although it foresaw a need for about £10 million to get Inmos through next year, there was time to solve this problem.

Sir Frederick Wood, BTG chairman, admitted in his late October presentation of the NBB accounts that Inmos would need £50 million if it was to become a viable international chip producer.

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Sinclair set to make £190 million (on paper)

by Kevin Cahill
COMPUTER entrepreneur Clive Sinclair is poised to rival the founders of Apple in the instant multi-millionaire stakes and gain a paper fortune of £190 million.

Although no official statement is available from either Sinclair's bankers N. M. Rothschild, or from Sinclair Research, it is known that the placing or sale of 10% of Sinclair's holding in Sinclair Research has been completed in well under the three weeks originally forecast for the operation.

City commentators have suggested that Sinclair himself will receive anything between £10 and

£20 million for the 10% stake he is offering to the City as a preliminary to a full listing.

Sinclair currently owns 95% of the shares in his company and the £20 million figure, which is based on a standard multiple of ten times this year's forecast profits of between £10 and £20 million, will give Sinclair a paper value of £190 million.

According to brokers, this is one of the largest paper fortunes ever made in the City of London.

Last year Sinclair Research made a profit of £10 million on turnover of £27 million.

This year the company is forecasting £50 million turnover.

EEC telecoms ruling

by Donald Kennett
THE European Commission has applied the Treaty of Rome rules on competition to a telecommunications case for the first time.

The decision could have far-reaching consequences for international telecommunications - and it could spark a major row between the governments of member states because in almost all of them, except the UK, telecommunications are run by government departments (as they were in the UK

until 1969).

Under the decision British Telecom is obliged to allow telecommunications to accept messages from overseas countries for onward transmission to other overseas countries. Some bureaux have been doing this already, although since 1978 BT has forbidden it under its conditions of providing the service after complaints from other telecommunications authorities (as they were in the UK

If you like our terminals you'll love our micros

TeleVideo, manufacturer of one of the most successful ranges of computer terminals, now has an 8-bit microcomputer.

All T8800 models are built around the Z80A chip and use the popular CP/M operating system. A clear growth path is provided from the stand-alone 84K T8802 to the 128K multi-user T8816.

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Printed in Great Britain by QM Limited, Moulton Park, Northampton NN3 3JL and published by QM Limited, Moulton Park, Northampton NN3 3JL

STC moves into micro distribution

TELECOMMUNICATIONS giant STC is to launch itself into the microcomputer market next week with the formation of a subdivision of its Instrument Services division. It will distribute a range of micros and peripherals including products from DEC and Hewlett-Packard.

There are no plans at present for any manufacturing.

Vote for Wilmot

ICL supreme Robb Wilmot has been voted computer industry personality of the year in the 1982 Recognition of Information Technology Achievement (RITA) awards. Other finalists were Kenneth Baker, Alan Benjamin and Mike Aldrich.

Don joins Ken

A UNIVERSITY computing director has joined Information Technology Minister Kenneth Baker as an unpaid adviser for six months. Dr David Hartley of Cambridge University is getting



Hartley

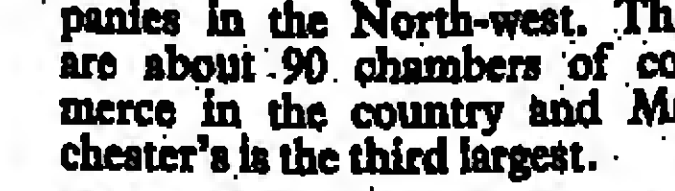
his salary from the university for a sabbatical which could be extended to a year. He will advise on the follow-up to the Department of Industry's Alvey Committee report on the future direction of UK research in computing.

Imperial spirit

IMPERIAL Software Technology has won a £100,000 BEC contract to study the requirements for software engineering databases. This is one of the pre-pilot projects currently being undertaken for the BEC Esprit project. The pilot projects start in the late Spring, and about 700 proposals, including many from the UK, have already been received.

In chambers

MANCHESTER'S Chamber of Commerce is to be the first in the UK to set up a computer section. It aims to boost computer companies in the North-west. There are about 90 chambers of commerce in the country and Manchester's is the third largest.



Harris to launch two superminis



High-tech - darling of the City



Computer national service for France

Govt puts £3.5million into robots expansion

by John Kavanagh
A £10 MILLION expansion which will create 250 UK jobs is under way at Unimation Europe, a subsidiary of the world's leading industrial robots manufacturer. The plan involves £3.5 million of public money from the National Research and Development Corporation and the Department of Industry. It is also expected to bring new jobs to UK subcontractors.

The move has been hailed by Information Technology Minister Kenneth Baker as a "major step forward in the government's policy of encouraging the establishment of Britain as a major robot supplier."

Unimation Europe builds robots for Europe in Telford, Shropshire. The expansion plan covers the design of a new robot at the UK factory and extension of manufacturing to Unimation's entire Puma robot range, including the modification of the products for Europe. In addition a £3 million development centre is being set up to tailor complete robotics systems from Puma components to customers' needs.

The plan will increase the number of jobs at Telford from 120 to almost 400 by 1988. Exports will rise from the current £4.5 million, or 60% of production, to £20 million. The UK content, coming almost entirely from sub-contractors, will rise from 75% to over 80%.

US-based Unimation started building robots in the UK in 1979 with National Research and Development Corporation backing of £220,000. That money will be paid back this summer, some months ahead of schedule.

The corporation's latest £2 million investment will be paid back as a levy on sales. The Department of Industry's £1 million contribution is a grant.

Unimation's only other European office is in Germany. Elsewhere it sells through agents. BL has been Unimation's main UK customer, although managing director Roger Cakebread said many companies now had machines for evaluation. "UK industry is getting the message, and the UK is currently our best market," he said.

"We have never found problems with unions: the main problem in Europe is a management who are nervous of automation."

Big guns up stakes for micro market

by Robert Parry
THE leading mainframe, the leading minicomputer, and the leading microcomputer companies steamed in with major UK announcements about their personal computers in the past week. And all are going for the market with a vengeance.

DEC, announcing its UK distribution and software arrangements, said micro sales would account for one-third of its turnover in three years.

IBM, at last, has launched its personal into the UK. And the long-awaited Lisa micro from Apple was unveiled yesterday (Wednesday).

The weight of the announcements, although expected for some time, adds fuel to predictions that micro sales will overtake minicomputer sales this year, and mainframe sales by 1986.

While IBM and DEC are hastily covering their backs and investing heavily in micros to avoid being squeezed out of the fastest growing sector of the computer market, the company that started it all, Apple, hopes that Lisa will propel it into the big company office market.

The IBM announcement, made by UK assistant general manager Tony Cleaver, settles the doubts that have surrounded how the



CLEAVER... Making it official for the IBM PC.

machine will be distributed here. IBM will sell the PC through established microcomputer dealers, IBM Retail Centres, and a special "bulk purchase" sales unit. Cost of a basic system is £2,080, and a typical larger system with 128K of RAM and two 320 Kbyte floppies is £3,442.

The DEC personal computers will be sold through authorised dealers and by DEC's own direct sales force. "There will be 150 to 200 outlets across the country," says DEC's UK small systems business manager Lawrie Cattell. "You can expect to see one in every major city soon."

So far 33 companies, representing 55 outlets for the machines, have been signed up. These include Computerland, Software Sciences and the Xerox Stores.

European production will take place at IBM's Greenock, Scotland plant, with some 80% of the output scheduled for export. Some 120 new IBM jobs and 250 new subcontracting jobs will be created.

The impact is strengthened by the announcement of further software for the machine. Peachtree has its accounting packages and office productivity tools running under PC-DOS, while Micro Focus has come out with Personal

See page 17 for leader comment and back page for user reactions.

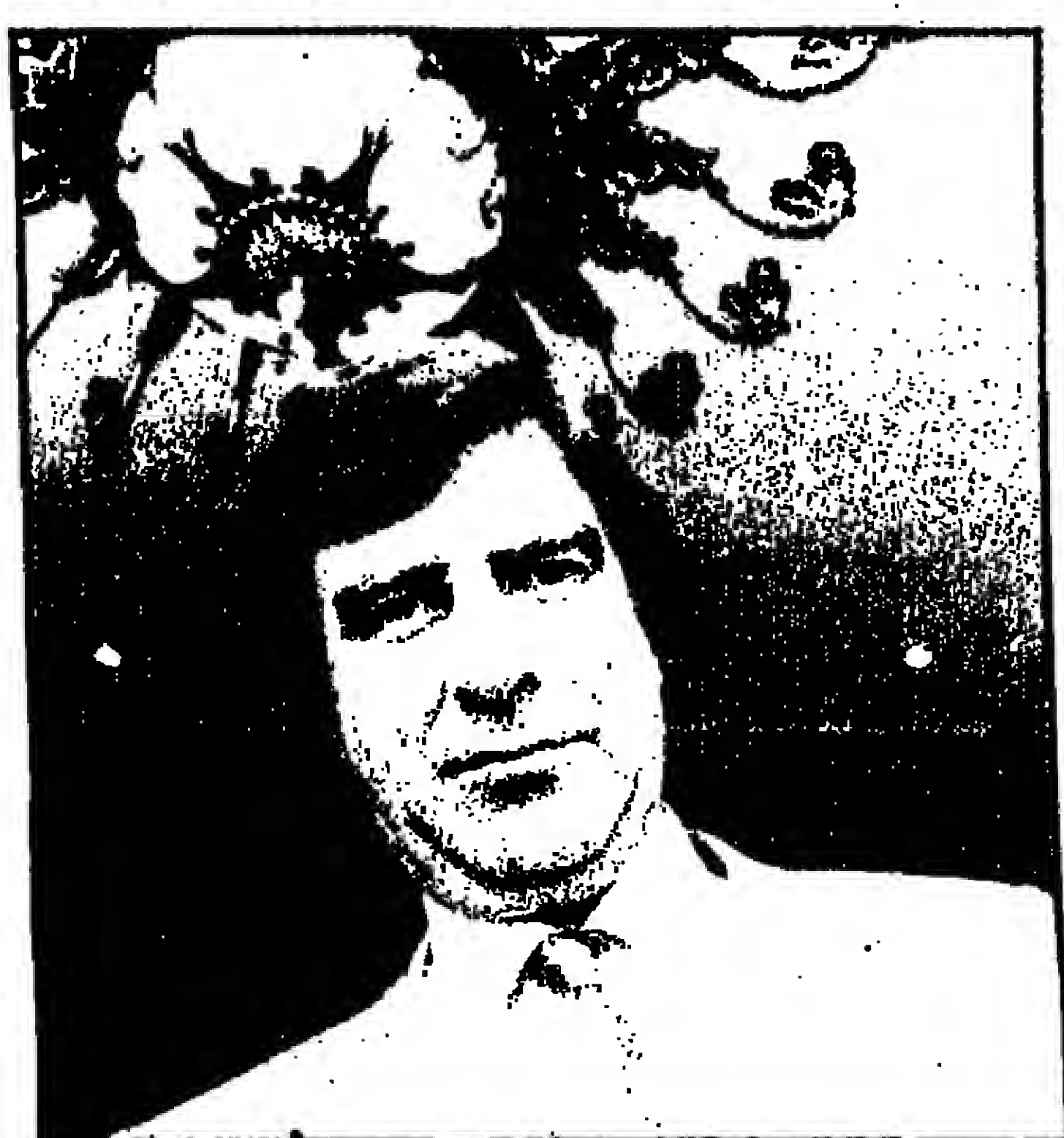
Cobol, a version of its Level II Cobol designed to take advantage of screen and keyboard features of the PC. Digital Research is now to sell CP/M-86 for the PC directly, at £42, and has announced a Logo interpreter to run on the machine.

DEC too will be selling on its name and the completeness of the service it will offer. "No other company has such comprehensive plans for personal computers," claims UK managing director Darryl Barbe. "We will set the standards."

This year DEC intends to ship at least 200,000 units worldwide, putting the personal computers well on track to overtake the teenaged PDP-11 range next year. PDP-11 sales have now topped 300,000. Within three years the personal computer line will account for a third of DEC's business, says Barbe. He adds that DEC has spent more than a billion dollars on the personal computer project already. The view of the vital importance of the personal computer end of the range, taking over from the small to medium sized minis, bolsters Wang's prediction last week that its Professional Computers will make up 40% of its UK business this year.

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COBB... Taking Apple to the office with the long-awaited Lisa.

The machines they will sell range from the £2,400 Rainbow 100 to the £3,400 Professional 350. All come with a year's free warranty and will be available for volume delivery from March.

DEC has set up a production site in Reading to handle reproduction and distribution of software for the micros.

Apple's announcement of Lisa marks the end of the company's secrecy over its first new machine for over two years. Lisa is much as expected, a 68000-based 16-bit machine, making much use of integrated software and a mouse (a hand held device to move a pointer).

Turn to page 6

Powerful Micros from Cifer



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Telecoms bodies are upset by telex ruling

by Donald Kennett

A SIZEABLE part of the world telecommunication establishment has been thrown into disarray by a European Commission ruling on a complaint against British Telecom.

The Commission set a number of precedents in the ruling, reported in last week's issue, that a UK-based private telex bureau must be allowed to provide transit services for messages between two or more countries at rates which undercut some European PTTs' prices for direct links. The bureau used BT's links, which cost as little as a quarter of some other PTTs' prices on some routes.

But most significantly the ruling established that the Treaty of Rome rules on competition applied to telecommunications as much as to any other industry.

The case involved the telex network, but the Commission says that the principles apply equally to any other networks.

Users, represented by groups such as the Telecommunications

Users' Association and the Computing Services Association are delighted. They have campaigned for the fullest possible introduction of competition since the UK government first started investigating the subject.

Disarray is evident among the telecommunications authorities, however. A spokeswoman for the Department of Industry, which took over responsibility for telecommunications from BT under the 1981 British Telecommunications Act, said it was not a matter that the department cared to discuss with the Press.

The ruling applied to a specific BT contract, and any other application of the principle was hypothetical, she added. In the event of a complaint involving the DoI, the matter would be referred to the International Telecommunications Union in Geneva. Until such time as the Office of Telecommunications (OfTel) was set up, the DoI lacked the expertise to deal with such matters itself.

The ITU said that such issues

were discussed within CCITT (the International Consultative Committee on Telegraphy and Telephony - a part of the ITU) and rarely referred to the parent body.

CCITT director Leon Burtz pointed out that the body is merely advisory and its members are not obliged to follow its recommendations, which are arrived at by consensus among them. He was very concerned about the ruling, however, and thought that would be discussed at the CCITT meeting in Geneva next month. Other countries might follow the precedent, but to change the CCITT Recommendation that the ruling had invalidated (at least for European members) would again require consensus.

Bernhardt Vree, head of the international department of the Dutch PTT, said: "As a member of CCITT and CEPT (the Conference of European PTTs) we are concerned that a European Commission ruling is contrary to our carefully worked out agreements."

but I don't know how we will react to it. We think about it along different lines from how they think about it at the Commission - it could be different for countries other than the UK."

Herr Bisernitz, head of international telex at the West German Bundespost, said: "There is not much we can do about the UK. We are trying to bring down our rates for intercontinental connections and our US traffic rate is no more than you would have to pay via a UK bureau." But other European countries could not match the UK rates in many cases, because the UK had been able to negotiate a lower pass-on fee with Commonwealth countries. This was unfair, he thought.

German companies were unlikely to apply to the BEC to run transit services, he added. "But we are very worried about the ruling, because it opens a free field for UK agencies to take traffic from our network."

See News Analysis, page 12.



COLIN CROOK... Zynar will use Ethernet eventually.

Computing alleviates jobs gloom

by John Kavanagh

COMPUTING is the only bright spot in a bleak picture of job prospects for graduates leaving university this year. Graduates are needed in the hardware and software industries, while the growth of office automation is giving people with high levels of education a lead over others in the job market.

These are the conclusions of three organisations specialising in gathering graduate career information, which have pooled their data to produce a gloomy view of the jobs market.

Their report forecasts an increase in demand for graduates from the electronics and computer industries but uncertainty about other areas - and even where there is a clear picture it is one of decline.

"Without the growth of computing things would be very bleak indeed," said Brian Punt, director of the Central Services Unit for Careers and Appointments Services, one of the three bodies.

Punt said many jobs have become more complex because of the use of computing, giving graduates an advantage over others. At the same time automation of office jobs and consumer services demanded new people able to understand, plan and install the systems.

New but small companies with a high proportion of graduates had sprung up in the software market.

Zynar chooses Arcnet for 'professional' local area network

by Donald Kennett

ZYNAR has adopted Datapoint's Arcnet for the "professional" local area network it launched last week. The network, called Plan 4000, supports the IBM Personal Computer as well as Apples II and III which are supported on Zynar's earlier network, the Cluster One.

Zynar, owned by Rank Xerox, expects to use Xerox's Ethernet LAN eventually. But managing director Colin Crook said: "We are aware of how complicated Ethernet is and no way could we have products ready for it before 18 to 24 months from now."

"But we can transfer files to that network, because we use its Internet protocols at the Transport level of the ISO networking model."

Plan (Personal Local Area Network) runs at 2.5 Mbits-per-second, compared with 250 Kbps on the earlier Cluster One. It uses coaxial cable as against 16-way ribbon cable and the "token-passing" access method as against CSMA/CD (carrier-sense multiple access with collision detection).

VLSI chips implementing the design are already being made for Datapoint by Standard Micro Systems.

UK deliveries are due to begin in April, although the first system has already been installed at Howland Business Systems of Windsor.

Hovland has a contract to do a worldwide branch network on Plan 4000 for a large US bank. The new network is compatible with the old at operating support level, so applications written for a station on the old can run on a similar machine can also be passed between a type of station on either type of network and any other type of station on the other network.

Network interfaces have been implemented for two operating systems on each of the models including CPM on the Apple II and PC DOS and UCSD P-System on the IBM PC.

The Plan 4000 file server is based on a Motorola 68000 microprocessor and it can point up to 548 Mbytes of storage on four Winchester disc drives.

Other servers available include IBM 3270 interactive terminals, IBM 3780 batch communication servers and a printer server capable of controlling several different types of printer.

The company expects total installations to cost between £40,000 and £70,000 for a 50-user, printer server and four 20-workstation, compared with up to £30,000 for a Cluster One with similar numbers of lower performance devices. The Plan 4000 interface card costs £600 for each station.

Harris to launch two superminis

by Kevin Pearson

HARRIS Systems will next week launch an all-out attack on the top of the supermini market with two new systems offering significant price/performance improvements over Digital Equipment's Vax products, according to UK general manager Frank Walters.

And Data General is hoping to launch its MV10000 top of the line model early in February.

Harris' two new machines, the H800-2B and the H800-2BP, are slotted to take on DEC's Vax 11/780. The 2B is said by the company to offer comparable performance to the DEC machine but at a 15% price advantage, and the more powerful 2BP machine outstrips the Vax 11/780 by 30% for the same price.

Both superminis feature Harris' 48-bit architecture, in comparison with the 32-bit processing offered by the other supermini manufacturers. They also incorpo-

rate pipelining, for the parallel execution of instructions, and parallel processing.

Also included in each is an integral hardware floating point processor for scientific processing. They can support up to 128 concurrent users in the full range of conventional supermini applications areas. And the H800-2BP also has 6 Kbytes of bipolar cache memory. The smaller 2B model is field upgradeable to the top specification machine.

Both offer considerable space savings over previous H800 machines and are housed in single cabinets, incorporating their associated disc and tape drives. The company claims that the new models occupy just one-third of the space needed by the ones they replace.

Also included as standard is Harris' recently announced Communications Network Processor (CNP). This device is designed to

take the task of controlling communications away from the CPU. It supports synchronous, asynchronous, isosynchronous and X25 protocols.

And Harris has unveiled a new memory module, the Integrated Memory Subsystem (IMS), which is standard equipment on the H800-2B and 2BP. It will be available as an add-on module to other Harris processors. The IMS incorporates the functions of an I/O channel controller and a disc controller on a single board along with memory arrays.

It can be configured with up to 12 Mbytes of real memory with a typical access time of 250 nanoseconds, the company says.

Few details are available on Data General's MV10000 launch, scheduled for February. It is expected to use a new processing engine rather than a stretched version of the company's MV 6000 and 8000 products.



WALTERS... Significant improvements over Vax products.

Scottish £1.5m push in Europe

by John Riley

THE booming young Scottish computer manufacturer, Future Technology Systems, celebrated the New Year with a £1.5 million push into Europe, and at home it is spearheading a computerisation programme in Scottish schools.

FTS, launched in 1980 with aid from the Scottish Development Agency, last week announced a contract with its first European distributor, the Dutch company Daisy Systems, which will get 300 of FTS' Series 88 computers initially. It will sell those in the Netherlands with its own Daisy printers.

The Series 88 is a multifunction small business computer with distributed processor architecture designed to solve the problem of systems expansion.

It is based on independent user workstations, each with its own 16-bit Intel 8088 microprocessor and 64-512 Kbytes of memory. Its first full production year was 1982, when it won a British Technology Group prize.

Software financing seminar success

by Kevin Cahill

"SUCCESS indeed", is how Doug Eycions, the Computing Services Association director-general, described the 150-strong attendance at the first Computer Software Financing conference last week.

Backed by the CSA, and with support from Barclays Bank and the Department of Industry, the meeting attracted not only companies looking for money, but one of the best turnouts yet by the finance industry.

Two of the major clearing banks, Barclays and Midland, each

sent four staff to take enquiries from would-be borrowers - and plenty they got too.

The conference was opened by John Butcher, Parliamentary Under-Secretary at the DoI, who pleaded with the industry to come and "persuade the government to increase the £10 million already allocated to the software product development scheme."

Butcher was non-committal on the Small Firms Loan Guarantee Scheme which is due for review shortly.

Under this scheme the government guarantees 80% of loans up to £75,000 made by specially designated finance sources, which include all the UK's main banks.

This form of loan has been highly successful.

The loan is particularly appropriate for software companies because the banks have had difficulty in deciding just how to treat software as an asset, and subsequently as collateral for loans.

This may have been why Barclays speaker Jon Sanders emphasised the importance of the scheme and asked the government to "continue putting its money where its mouth is."



SANDERS... "Gent must put money where its mouth is".

Strike at Timex would end Sinclair contract

by Robert Parry

SINCLAIR Research is ready to pull the plug on production of its ZX81 and Spectrum micros at the Dundee Timex factory. Workers there are threatening strike action if management calls for compensation following the loss of the Timex 3-D camera contract and Timex' decision to stop mechanical watch production.

"If the threat of strike action is not removed in discussions between management and unions, and a full strike seems inevitable, we will move our business elsewhere - probably permanently," says chairman Clive Sinclair.

This move would not only affect the machines currently being assembled by Timex for Sinclair, but would also apply to future products Sinclair had planned to manufacture in Dundee, bringing new jobs into the factory, Sinclair added.

These future products include the Microdrive add-on storage unit for the Spectrum and the flat

screen television.

"We would take this decision with great regret," says Sinclair, emphasising the high quality and high production levels of the micros produced in Dundee.

There are 600 Timex employees manufacturing the Sinclair machines. They turn out 60,000 ZX81s a month, and the majority of the 40,000 Spectrums a month being produced. The rest of the Spectrums come from Thornhill.

Timex management is looking to shed 1,900 of the 4,200 employees.

Following strike action at the Timex plant at the end of last year, when Sinclair lost a week's production from the Dundee factory, Sinclair cast around for potential alternative suppliers.

According to a Sinclair spokesman, production could be switched to other companies within 48 hours without any loss of continuity.

INTRODUCING THE FREEDOM 100

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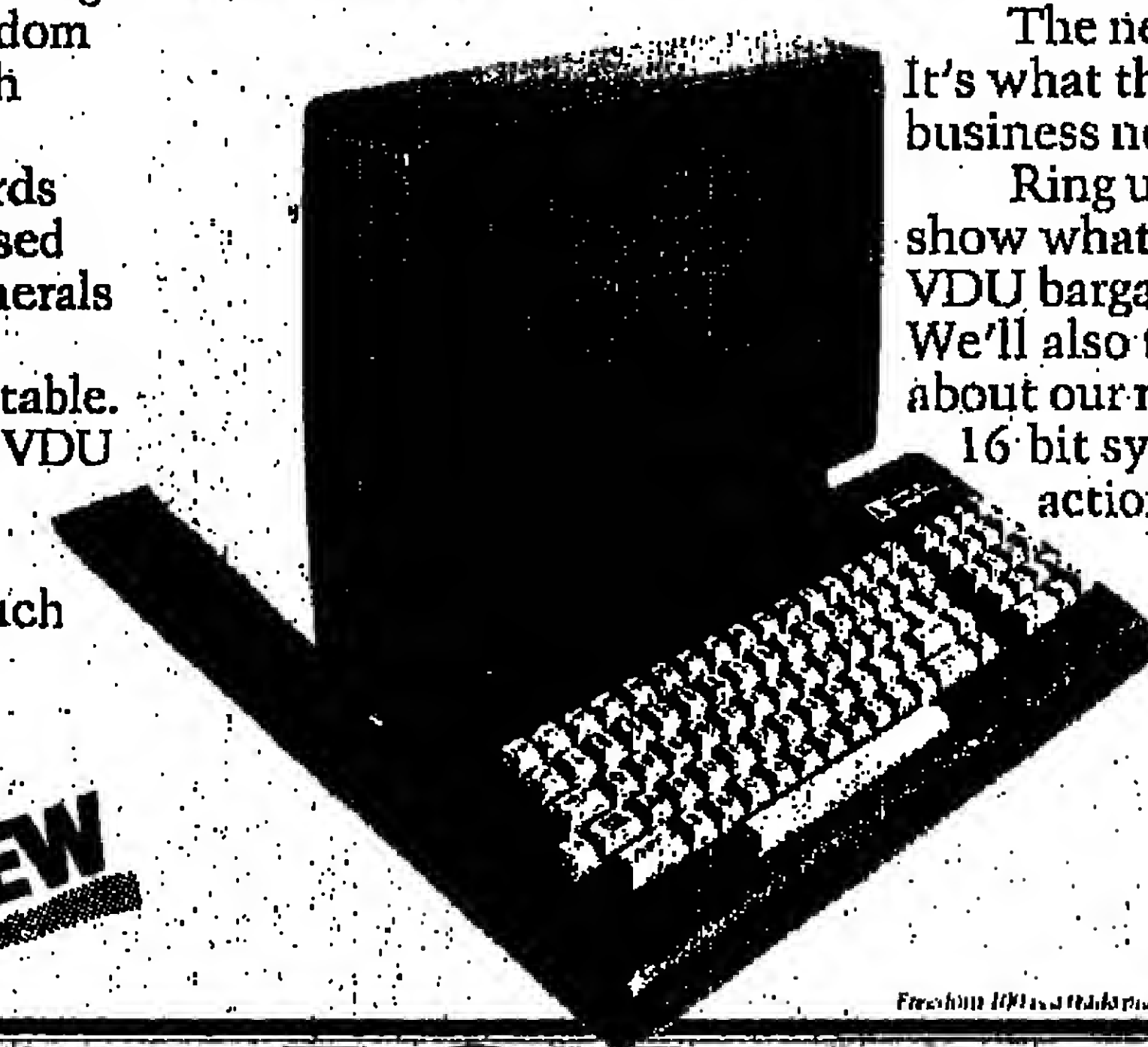
On the other hand, if you're looking for a new generation VDU with even more features you could settle for the new Freedom 100. And pay £140 less.

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7 x 9 Dot Matrix	✓	✓
25th Status Line	✓	✓
Video Attributes by Character	✓	✓
Attribute Key No Display Space	✓	✓
Line Drawing Character Set	✓	✓
Screen Fill	✓	✓
Read Cursor Address	✓	✓
Detachable Keyboard	✓	✓
Separate Function Keys	11	10
Insert/Delete Line Keys	✓	✓
Insert/Delete Character Keys	✓	✓
End of Line/End of Page Keys	✓	✓
Print Key	✓	✓
Block Mode	✓	✓
Load/Save to 19.2K	✓	✓
Time of Day	✓	✓

* Based on preliminary data.



THE NEW FREEDOM 100 VDU

The competitive connection

Gullstream Computer Products Ltd (UK sole distributor of Liberty Electronics USA)
Unit 3A, Tunnel Estate, 726 London Road, West Thurrock, Grays, Essex RM16 1LS Telephone: 04026 4916.

BT puts off price rises after £268m profit

by Donald Kennett

BRITISH Telecom's half-year profit to last September, at £268 million, was three times the figure for the same period in the previous year. But the previous profit of £89 million has been revised downwards from the published figure of £140 million under new accounting practices designed to "reflect the competitive environment introduced under the British Telecommunications Act 1981 and in the light of technological change."

Chairman Sir George Jefferson said the improved results came from the price increases made in November 1981, from business growth and from improved efficiency. Further price increases, already postponed from last November until April, will now be put off until July or later. The Post Office Users' National Council has called for them to be put off until the end of the year.

The number of subscribers on the network was 425,000 higher than in September 1981 and the number of calls handled was 5.5% up on the first half of 1981. Revenue was up from £2.7 billion to £3.1 billion. Capital investment for the year 1982-83 will now be only marginally up on last year at £1.5 billion instead of the £2.2 billion it expected to spend.



JEFFERSON... More efficient.



Software opens BACS to small businesses

by John Kavanagh

THE BACS automated bank clearing system has been opened up to small businesses with the launch of a £150 software interface for microcomputers running the CP/M and MP/M operating systems.

The package, believed to be the first of its kind, is from Comley Computer Services of Guildford, Surrey. It writes details of direct debit payments in BACS format to eight-inch floppy discs, cutting the handling of paperwork.

Comley is offering the package to systems houses and manufacturers. The UK floppy disc manufacturer Bicon Research of Cam-

bridge has taken the product and sells it with its drives at £1,400.

BACS extended the range of magnetic media it accepts from tape to eight-inch floppy discs last April. About 150 firms send data on floppies. They account for 500 discs and 110,000 transactions a month. This is a tiny proportion of the 50 million transactions BACS handles on its ICL mainframes. A 5.25-inch floppy disc option is expected to be introduced this year.

Bicon, formed in 1978 and now with 15 staff making two of three drives a week, is preparing to launch a Winchester fixed disc unit next month.

Tandy sets standard

by George Black

TANDY, the huge American electronics group, is to take on the Logica-Microsoft Xenix operating system as standard for its Model 16 micro. This is the first major announcement of the Unix-like logic being matched to a Motorola 68000-chip machine.

Tandy, which introduced its TRS-80 Model 16 to the UK in November, says the decision will set a standard for multi-user micro operating systems.

The Model 16 uses the new 16/32-bit chip as well as the older 280A. It was launched in the US during 1982.

Logica, the £40 million British software house, last week signed a deal with the American Microsoft to co-operate on the promotion of

its Xenix product. Under the new agreement Logica is to port the operating system to the growing range of 68000-based micros.

The Tandy connection is a crucial one because Tandy has world computer sales of \$600 million a year including £8 million in Britain.

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French Telecoms Minister Moxandeu... Extends Teletel trial.

France to extend its Teletel trial

by Jack Gee

FRENCH Telecommunications Minister Louis Moxandeu has announced that the trial of Teletel, France's interactive videotex system, which has just completed its scheduled 18-month test in a Paris suburban community, is to be extended.

At present 2,500 homes in the Velizy area - south-west of the capital - are equipped with Minitel terminals. About 300 will soon also have "Smart Card" readers to enable them to conduct electronic banking operations. Moxandeu said that the

electronic telephone directory whose information is available to subscribers via Minitels in and around Rennes would be extended during the course of the year to a wider area of Brittany.

By the end of 1983 about 250,000 Minitels will be in service. So far 600,000 terminals have been ordered from manufacturers. During the current year 300,000 more will be contracted for. RTT-LA Radiotechnique, the French offshoot of Philips, Compagnie Générale d'Electricité's subsidiary Tellec, and Matra will have equal shares of this new Minitel order.



Teletel's electronic directory.

European PTTs hold back boom in teleconferencing

by John Kavanagh

A WHOLE new industry is emerging in the US with a 2,000% increase in the use of teleconferencing for business meetings expected between 1981 and 1986.

But in Europe the growth of teleconferencing is being held back by the rate at which national communications authorities move to wideband satellite services and digital networks.

These views on a potentially far-reaching market come from the US market research company Quantum Science, which has added a report on teleconferencing to its \$11,000 series on communications. British Telecom is experimenting with personal teleconferencing workstations in customers' offices. Quantum says the number of business meetings held using teleconferencing in the US will grow from 89,400 in 1981 to 1.8 million by 1986 to create a \$580 million market for suppliers of equipment and transmission services.

The biggest slice, \$235 million, will be transmission services. Spending on workstations combining voice and facsimile will reach \$220 million. And \$123 million will go on equipping 1,380 rooms for full video and freeze frame transmission. Freeze frame video involves sending a frame every few seconds. It is suitable for discussing and amending documents. The suppliers are falling into defined camps. Transmission services only - these companies include RCA, Western Union and IBM's Satellite Business Systems - equipment only and turnkey systems. And a handful of new companies are setting up shared teleconferencing rooms in hotels and office blocks.

But Quantum says the suppliers still have to beat human factor problems to get the predicted growth. Harry Hoyle, senior vice-president for Europe, said factors such as the position of the camera, the room temperature and

whether people sat in rows or a horseshoe made all the difference in getting acceptance of teleconferencing.

Hoyle added that although travelling costs were companies' main criteria for choosing teleconferencing, once they were used to it travelling took second place to convenience. "The driving force soon becomes the convenience of people in different locations, even those close together, being able to get together for ad hoc meetings," he said.

Quantum says the equipment suppliers must agree on a standard for data compression to keep transmission costs down. Sending a full moving film over a communications line demands very high bandwidth.

Manufacturers are working on ways of sending only the parts of the picture which change significantly; for example when someone is demonstrating something or working at a blackboard.

Hoyle and others in the business said the use of teleconferencing in Europe was very small. Dr Barry Stapley, head of the UK research and consultancy company Communications Studies and Planning, put the number of meetings held as teleconferences at a few thousand a year, most of them in the UK.

Like Hoyle, Stapley said the communications authorities' monopoly partly explained the slow take-off in Europe. "The market is free in the US so small companies can design and sell systems," Stapley said. "In addition, during the energy crisis President Carter personally campaigned for the use of the phone rather than the plane. And the US is a vast country, so the convenience factor is that much greater."

"Teleconferencing: Product Development Problems - Interactive Audio/Visual Workstations Here Afterward. Part of the Strategy Program, \$11,000 a year. Quantum Q20, 16 Charles II Street, London SW1V 4QU."

digital

DEC is expected to stay well ahead of its "supermini" rivals.

DEC leads in the 32-bit race

by Kevin Pearson

DIGITAL Equipment Corp. Prime and Perkin-Elmer will be the winners in the high stakes 32-bit supermini-computer market.

US management consultancy Venture Development predicts annual compound growth of almost 32% in the "supermini-computer" sector. And it should come as no surprise that DEC is expected to stay well ahead of its rivals in the field.

"DEC is really dominating the market," says Tim McMahon, computer industry analyst at Venture Development. "And there is no competition."

"The interesting fight is for second place, between Prime and Perkin-Elmer. Prime overtook Perkin-Elmer in the first quarter of 1982, even though Perkin-Elmer was the first company to

launch a 32-bit mini, back in 1975. "Data General has a long way to go to catch up. It came to the market very substantially late," he adds.

This overall picture is somewhat misleading as Hewlett-Packard, the second largest manufacturer of minicomputers, did not launch its first full 32-bit system until Compaq 82, in November. It is expected to launch a full 32-bit version of its popular 3000 series minicomputer this year.

Data General, third in the overall picture, did not launch its MV8000 until 1980, and did not add a second machine to the range until 1982. Now it has added an entry level MV4000. It is expected to add a new top-end machine in the first quarter of 1983.

Prime's position, according to the report, is due to its early dedi-

cation to the 32-bit market. The company's entire range, from the 150 to the 850, are 32-bit systems.

The other important factor is Prime's early concentration on the commercial and business markets. The major markets for superminis have been real time analysis, time sharing and scientific computing. The report states that mainframes are not price competitive for many of these applications.

One of the major factors governing the growth of the market will be the widespread use of superminis in applications previously dominated by mainframes, particularly in the commercial and general purpose areas.

Other factors, according to Venture Development, will be the emergence of new entrants to the market, and a wider range of systems from existing contenders.

Switch to Honeywell

by John Riley

THE nerve centre for university admission allocations is starting a switch from a Sperry-Univac to a Honeywell system in March.

The Cheltenham-based Universities Central Council on Admissions (UCCA), has signed a £500,000 deal for a DPS 844C miniframework and peripherals to replace the Univac 90/60 it bought in 1978. The changeover is due to UCCA's capability not from dissatisfaction with Sperry-Univac.

"We are sad to move away from Univac," says UCCA head of computing services Ken Houghton. "We have had no complaints about their service since 1966". He explained: "The main attraction is the CP-6 operating system".

Baric on the look-out for regional partners

by George Black

BARIC, the computing services company owned by ICL and Barclays Bank, is looking for regional partners to support its newly centralised operation, and number of new agreements could soon be reached.

Marketing services manager David Paynter said: "Over the last 18 months our processing has been centralised on Feltham away from local sites. But we don't want to leave our customers unsupported, so we are actively looking at the situation round the country to back up our services."

First of these new deals has been with South Shields-based Ford

Computing (North-east), the two year-old £500,000 subsidiary of Ford & Co, the defence industry parts manufacturer.

A joint trading agreement was signed late last year for Ford to support Baric's range of business management systems.

Paynter said: "Ford should be able to support our small business systems in the North-east better than we have been able to ourselves."

And David Luke, a Baric executive working with Ford in the North-east, confirmed that the joint venture had already brought two big contracts, one in the public and one in the private sector.

SALES BRIEF

Sperry lands airlines deal worth \$12m

SPERRY Univac has won by orders totalling about \$12 million from three airlines. The largest order, worth \$6.5 million, is for Iberia Airlines of Spain. It is a Sperry Univac 1100/82, for a time control of spare parts. The other orders are from Indian Airlines and Ozark Airlines of the US.

Ozak is to take 250 specially designed terminals for its reservation system. These terminals, model versions of Sperry's UT 3 PARS, allow a split screen display with a "scratch pad" work area.

Boost for Harris

A \$40 million order from the US Navy has made a bright start to New Year for the sailing machineputer giant Harris. The order includes Harris super-mini-computers for the automation of administration on board 450 of the Navy's smaller ships.

Floating data

THORN EMI has won a £2 million order for ocean data logging equipment from the UK Offshore Operators Association. The order is part of a four-year programme supported by the Department of Energy, and includes two floating data capture buoys to gather information aimed at making future offshore structures safer.

High flyer

SWEDISH telecommunication equipment manufacturer Thors Ericsson has won a multi-million pound contract from the Civil Aviation Authority for an advanced telephone system. It will be installed at the London Air Traffic Control Centre in West Drayton, Middlesex, where it will control most air traffic after 1987.

That'll do nicely

AMERICAN Express has ordered three fast Trace II document readers worth £2 million from Recognition Equipment based in Slough. The readers will be installed at Amex's Brighton European headquarters and will add to the 15 already delivered to the US and Canada for the company's North American business.

Powerful

MODCOMP has been chosen to build a £2 million computer system to control pumping of water in a large hydro-electric power station in the eastern US. The station is being built by the Virginia Electric and Power Company and will deliver a continuous 2,100 Mwatts.

Pie system

PORK pie maker George Adams has ordered a £50,000 commercial management system from GSC Computer Services, offshoot of the GSC group, known for its bananas. The order includes sales ledger, purchase ledger, nominal ledger and payroll for use in the Spalding factory where the prize-winning pies are made.

Driving the minis

SYSTIME of Leeds has ordered £500,000 worth of magnetic tape drives for its minicomputer systems from Thorn EMI Data Tech. The drives will be packaged as the Systime Series 5000, 6000, 6730 and 8780 computers.

CAP for ICI

CAP Northern has won a contract from ICI to design, develop and implement a system to give information on the packaging of chemical products. The system will link Incochem remote data entry terminals with ICI's central Burroughs B7800 mainframe at the Alderley Edge headquarters of the Pharmaceuticals Division.



BUTCHER... Biggest task is to change the attitude of senior management.

Computer firms take up 'good design' offer

by Andrew Thomas

COMPUTER companies are among the first UK firms to take advantage of a new scheme aimed at improving the design of British products. The Department of Industry has committed £3 million to provide design consultancy services to UK companies, and a further £500,000 has been set aside for a campaign aimed at increasing management awareness of the need for good design.

The DoI is working with the Design Council in offering companies with between 60 and 1,000 employees 15 days of full design consultancy free of charge, and a further 15 days at half price. Since its June launch, over 200 companies have applied for assistance and 170 of these have had their applications accepted to date.

According to the Design Council, 5 to 10% of these are computer companies, although the council refused to give any names.

John Butcher, Parliamentary Under Secretary of State for Industry, maintains that not enough

attention is paid to good design at an early stage in product development.

"The biggest task before us is to change the attitude of senior managers in industry," says Butcher, "particularly those with the purse strings in their hands."

"Design is where Britain has fallen down in attacking overseas markets," he continued. "It should be seen as a total concept, rather than being treated as an afterthought."

Design Council chief Sir William Barlow sees the campaign as coming at the right time: "After two years of recession, we are giving small and medium-sized businesses the help they need to fight their way out of that recession by paying more attention to design."

The awareness campaign, Design for Profit, involves nationwide advertising and a series of 12 seminars around the country where leading designers and manufacturers will give presentations on the need for good design.

Tax advantages for IBM lessees

by Kevin Pearson

IBM is giving major tax advantages to its rental customers with the right to buy rental equipment - but the company will not lose out. It hopes to gain other financial benefits by the move.

IBM will accrue major cash flow and other financial advantages from allowing customers who rent IBM machines to buy them as a right.

The major advantage is that IBM will not have to finance the rental deals. Under a rental contract a machine remains IBM's property and the cash flow generated by the use of the machine will be spread over either two or four years, the term of the rental.

By allowing users to buy machines after they have been installed for one month, instead of the previous 18 months, IBM hopes to improve its cash inflow in any financial year. It will also reduce the level of non-productive assets in its balance sheet and

therefore improve its rate of return on assets.

Against this must be set the loss of tax allowances resulting from giving customers the right of purchase in the rental contract. A spokesman for Inland Revenue confirmed that a right to purchase in a rental or leasing contract means that tax allowances will accrue to the users rather than the leasing or rental company.

Hence IBM has decided to take all new rental business inside IBM company, bringing IBM UK into line with the rest of the world. IBM UK Rentals will, therefore, continue to handle most of IBM's rental business in the immediate future. UK Rental's clients have the same Sol rights as rental customers of IBM UK.

A spokesman for the company said that IBM did not extend purchase rights before because Sol businesses had not seriously breached the limits imposed by the Inland Revenue until mid-1982.

normal tax.

But when this limit is breached, as almost happened in 1982, the company's tax bill would increase dramatically. The consequence of this was that IBM suspended its Sale of Installed policy in June 1982.

IBM will continue to operate IBM UK Rentals as a rental operation. It will handle its existing business and any repeat business from existing clients. All new business will go through the main UK company, bringing IBM UK into line with the rest of the world.

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Marathon case comes to court

by George Black

THE marathon legal struggle involving Computer Sciences Corporation and the US Justice Department is at last approaching resolution. The case is due for hearing by a court in Virginia this spring.

The action arises out of a Justice Department inquiry into the workings of the federal procurement agency, the General Services Administration, between 1972 and 1977. CSC's remote computing service Infont was under contract to the GSA in that time.

The inquiry was set up to report on allegations of corruption within the procurement agency. It led to several charges against CSC and its employees, but the indictment was thrown out by the District Court of Alexandria, Virginia, in 1981.

The Justice Department appealed and in June 1982 part of the indictment was reinstated. CSC took the case higher still, but the Supreme Court refused to hear it. So now it will finally be heard back where it began.

VDU operators have a glaring problem.



Polaroid CP-70 Contrast Enhancement Filter

Document 4464A. Now on Page 1 Line 25 Position 2

The text on this screen is sharper, clearer, and easier to read.

That's because there's a polarized filter on it. The Polaroid CP-70 Contrast Enhancement Filter for Visual Display Units. It increases contrast, and dramatically reduces glare. So it also helps to reduce eyestrain. Which, according to major health studies, is a problem affecting over 80% of all VDU operators.

When you operators don't strain their eyes, they become more alert. This helps reduce careless errors. And helps increase productivity.

Alternative solutions aren't so effective. Tinted glasses, for instance, doesn't stop glare completely. Etched screens reduce sharpness and fail to improve contrast. And a massive office overhaul of lighting, walls, and windows causes unnecessary expense. Besides costing a fortune.

Fortunately, Polaroid have come up with the clear answer.



Each year the number of people using Visual Display Units increases.

And, each year, so do the problems which VDU glare causes. Studies have shown that over 80% of operators suffer from eyestrain, which, in turn, leads to tiredness, careless errors and lower productivity. It also increases absenteeism.

However, Polaroid have found the answer. The CP-70 filter. As you would expect from a company of Polaroid's reputation, they haven't just reduced glare, they've eliminated it. The CP-70 filter comes in a range of sizes which fit easily onto every type of display terminal. And once one is fitted, it should never need changing.

Cave Tab have been appointed Main Distributors throughout Britain and Europe. So, along with Polaroid's superb product, you also get our exceptional back-up. We believe you should see the Polaroid CP-70 filter straightaway. Almost every company which has bought one

has discovered such great advantages that they have come back for more. Send in the coupon below or phone. We'll make sure you get full details without delay, or obligation.

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Cave Tab Ltd, Tenner Road, Moulton Park, Northampton NN3 1FZ. Tel: (0604) 47228 Telex: 311675

Standard seekers home in on ISO Network Layer

by Donald Koenig

EFFORTS to define standards that will ease the problem of communicating across more than one network are currently being concentrated on the Network Layer of the International Standards Organisation's seven-layer Open Systems Interconnection (OSI) model.

ISO Network Layer working group convenor Jeremy Tucker, told a conference in London that, while the neighbouring layers were covered by proposals which were well on the way to being approved

as standards, details of the Network Layer were still being discussed at the technical working group level.

The conference, organised by Oyez and the Department of Industry, was the first international conference devoted wholly to OSI. In the technical discussions, Tucker said there were conflicts between the telecommunications authorities, which wanted many options in the Network Layer, so that users could make efficient use of public networks, and computer manufacturers, which wanted

protocols that could be implemented simply and economically.

ISO wanted to provide a simple overall scheme for users, he added, and although both carriers and manufacturers wanted to make their services compatible for users, few users were actually involved in the discussions. It is unusual to see so few users involved in an ISO discussion, he said.

"Connections" requirements include provisions for interrupts and for connectionless operation. Operators of circuit-switched networks see no need for other

whereas for local area networks such as Ethernet, connectionless operation is the normal mode - the sender doesn't wait to set up an exclusive connection to the receiver before transmitting a message; it just launches the message on to the network, knowing that the receiver will get it if everything is functioning normally.

A packet switched network can deadlock or to stop a long transmission before it is finished and it is used either connectionless (for datagrams or broadcasts) or connection-oriented operation (for long transfers or two-way exchanges).

There has also been some heated discussion about what error detection and recovery facilities should be included in the Network Layer, since one opinion says that to provide them would be an unnecessary duplication of the facilities in the Transport Layer (the next layer up) and the other says that to leave them out would be to waste the facilities provided in the

RDLC protocol used in packet networks.

Bus system the key to latest British micro

LAST week's launch of the Microframe microcomputer from Tycom, a newcomer to the British micro-making fraternity, was accompanied by a lavish scattering of gimmick terms like "the first of the fourth generation" and "future proof" computing. But how new is the concept behind the machine, and how secure its future?

Bus-based micros are not new. Closely-linked systems of multiple processors and shared peripherals are not new. Even the marketing play of a system to last into the 1990s is not new.

The heart of Tycom's system is its versatile base bus connect, or VBC. The company has redesigned bus hardware to fit its ideas of what the software interaction of different parts of the system should be, says R&D director Emrys Williams. It used high level protocols to make interfaces to the bus easy to implement.

"We looked at the VME bus and Multibus, but we didn't really like them," he says. "There were too many things we wanted to do differently."

The bus system can have six, 12 or 22 slots, depending on the hardware configuration chosen, and uses standard single or double Eurocards.

An 8 MHz 8088 processor, running the VRTX real time executive, controls the bus. It can be dedicated to looking after the I/O and communications, or can be used to run application programs under CP/M-86 or MS-DOS.

So far processor boards using the 280, 8088 and 68000 microprocessors have been developed, along with various peripheral boards. Most have been designed by Tycom's own R&D arm — which used to be Mapcon consultant Jacobson until taken into Tycom — but two boards were put out to subcontractors.

The 280 and serial communications boards were designed outside, partly to ease capacity problems within Tycom, partly to test out the bus specification and documentation, says Williams.

It is Tycom's hope that, once the machine has become established, third parties will develop boards to put into the system. "We plan to make information about our VBC system widely available, and are protecting it with patents," says Allen Timpany, Tycom managing director.

But the architecture of Tycom's machine, despite the company's marketing claims, does not represent a fundamental change.

"If that is a fourth generation machine, we have been making one since 1981," says Cifer Systems marketing services manager Peter Readman. Cifer uses the IEEE 488 bus, both as its Series 1's internal and external bus, and like Tycom reckons it is easy for users to tie on other processors and software.

So far Cifer has stuck to 280s, which it scatters liberally around the system, giving boards local intelligence. But a 68000 processor board, carrying 256K of RAM as well as the 16-bit processor, is under development, says Readman.

Another earlier entrant into the market with a closely-coupled set

of processors — a local area network in a box — was Shelton Instruments. "This is precisely how SigNet was put together two years ago," says managing director Chris Shelton. He, like Timpany and Readman, proclaims a processor-independent bus, and is soon to bring out 8088 satellites to attach to the system. So far only 280s are used.

Plessey has its System 19, also sold as the Logitek Landmark — "a landmark in computer design," Logitek claimed in November, "a system to last till the 1990s" — which can run up to 20 users on a Multibus system. Each user has a 280 processor and shares central storage and peripherals. 8086 boards are under development.

And there are others too.

What Tycom has done is not new. But it has taken more of the complexity out of building up systems with a variety of processor types and operating systems. If the price is right, and if all-capable magic boxes are what users want, it could have a winner.



READMAN... Bridging the generation gap.

Sony closer to 3 1/2-inch disc standard

THE band of brothers lined up behind Sony's 3 1/2-inch micro-floppy drive has settled its differences, giving extra strength to its claim to the standards crown.

Sony and 12 other leading floppy industry companies have agreed to support a mutually compatible 3 1/2-inch format, healing the rift that opened up over the disc media.

"The major technological issues relating to compatibility have been settled," says Robin Allison, Sony UK marketing manager for the drive. Sony thinks the compatibility will strengthen the position of the 3 1/2-inch disc as the leading format for a microfloppy industry, as well as reduce costs and expand the potential market through greater second sourcing opportunities.

The 13 companies supporting the agreed format are: Atari, Athens, BASF, Fujii Photo Film Company, Memorex, Media Systems Technology, Shugart Associates, Sony, TDK, 3M, Verbatim, Wabash Datatech and Xidea.

The media will hold one Mbyte, in a double-sided 135 track per inch version.

With such support from the disc drive and media manufacturers, bolstered by Tandon's recent announcement of a compatible drive, Sony reckons the industry is seeing the emergence of a de facto standard.

The competition for this position does not have so many big guns behind it. The main rivals are the 5 1/4-inch drive from the Dyson/Tabor/Seagate stable and the Hitachi/Matsushita/Marwell three-inch unit, with added support from Micro Peripherals.

Another offering, from Cannon, goes with a 3.8-inch drive format, while IBM — the constant threat to any de facto standard — is said to be seeking manufacturers for its 3.9-inch unit.

The rewards to be reaped by the winner of this battle are great.

THE growth business of faking Apple microcomputers is not catching on in this country. Two companies with Apple imitations here are negotiating with Apple UK, and look as if they will stop trading the fake Apples here.

"We have the means at our disposal to take all action necessary to stop abuse quickly and easily," says Apple UK managing director Peter Cobb.

Letters have been passing between the parties, and Cobb thinks things will soon be settled without having to go to court.

Meanwhile in the Far East, hot-bed of the Apple rip-off business, writes have been filed against 19 shops trading in Apple look-alikes in Hong Kong.

Charges are of infringing copyright on the operating system software.

Apple suggests that one reason why the business has not taken off in the UK is that dealers here have a hard enough job to decide which of the myriad legitimate machines they stock, without worrying about legal problems.



ALLISON... "Major technological issues have been settled."

Fake micro trade rejected by UK dealers

PERSONAL computer leader Apple is to tie together its micros through Ethernet. Apple has signed up Californian supplier of Ethernet interfaces 3Com to provide prototype hardware to Apple this month, ready for inclusion in Apple products later in the year.

Low cost network products for Apples are already available from companies like Zynar and Corvus, and the appearance of Ethernet products bearing the Apple label is bound to affect their share of the market.

But both Zynar and Corvus cater to a growing range of machines, and allow mixed networks.

3Com was founded in mid-1979 by early Ethernet worker Bob Metcalfe, and has developed hardware and software Ethernet products for DEC equipment.

It recently started shipping its EtherSeries products, which incorporate VLSI custom chips built by Sequ Technology, to give low cost direct Ethernet connections for personal computers like the Apples.

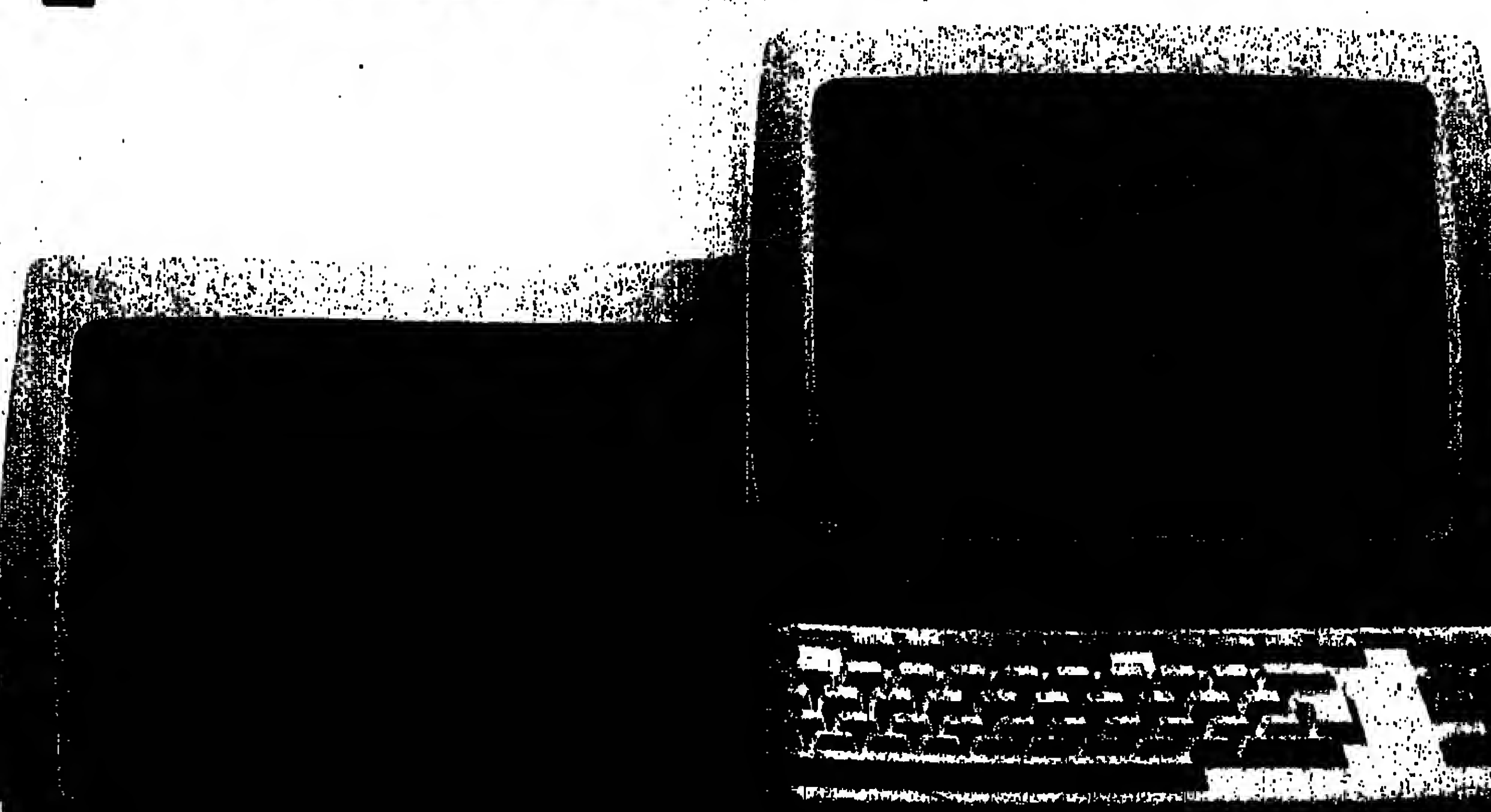
Ethernet link for Apples

Micro News is compiled by Robert Parry

Is Digital about to set the standard in personal computers too

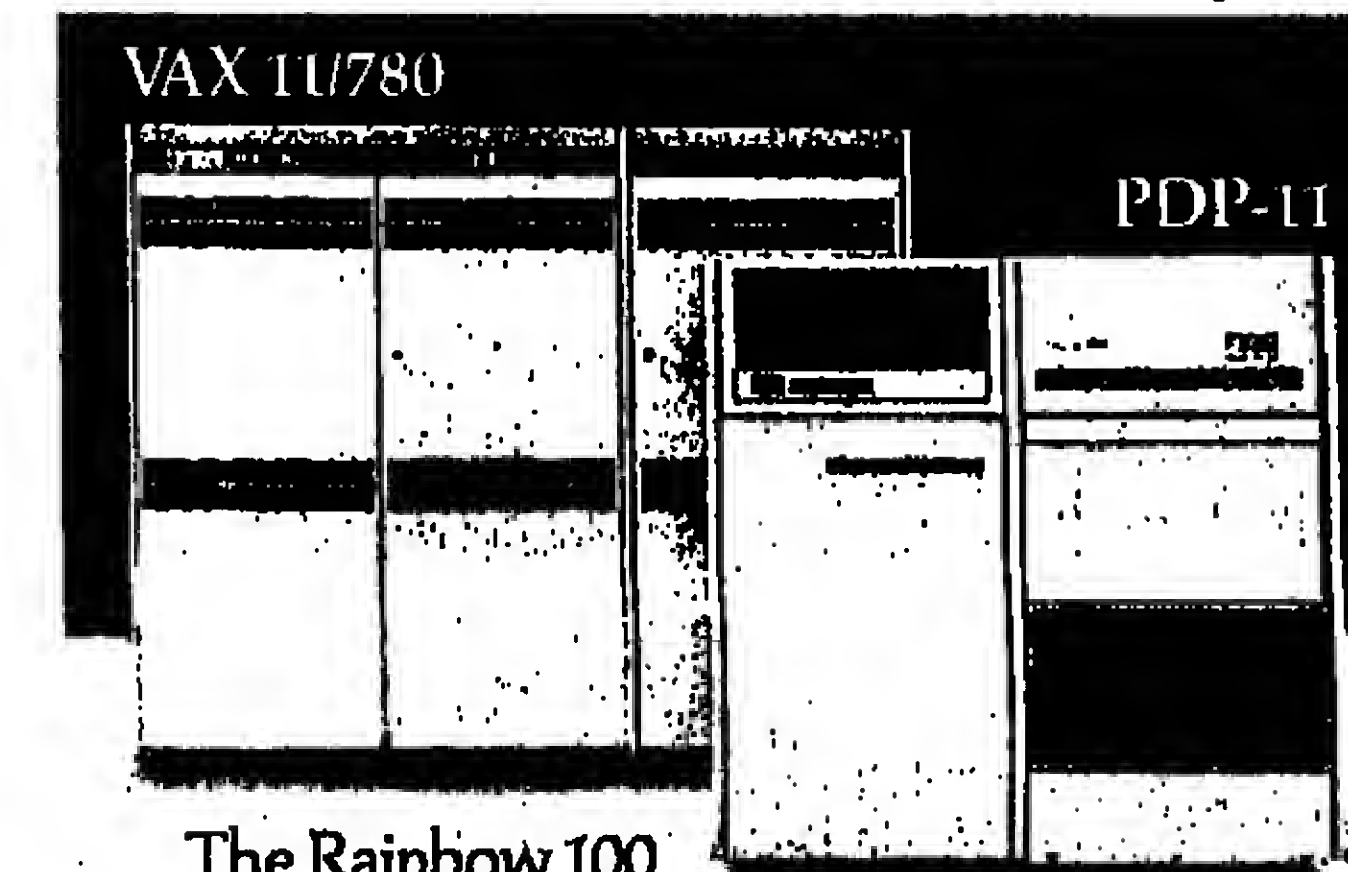


The Rainbow 100 accepts both 8 and 16-bit CP/M programs.



The DECmate II is a professional word processor.

The Professional 300 series is based on the PDP-11.



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digital

EEC ruling hastens free competition in European telecoms

Donald Kennett reports on how British Telecom was found to have contravened the Treaty of Rome

A BIG step in the liberalisation of European telecommunications was taken by the EEC Commission in a ruling last month against British Telecom.

The Commission was applying the Treaty of Rome rules on competition to a telecommunications case for the first time. It decided that BT should allow UK-based telex bureaux to relay messages between two or more countries outside the UK, although this is contrary to a recommendation from CCITT (the International Telegraph and Telephone Consultative Committee), the body through which the national telecommunications authorities (PTTs) co-ordinate their activities. BT had allowed the traffic at one time. But in 1976 CCITT agreed on the relevant recommendation. BT applied the recommendation in 1978 after coming under pressure from fellow PTTs which said BT was depriving them of revenue.

A complaint about BT's activities was first made to the Commission in 1979. The Commission balked at dealing with the case when it came up for review in 1980.

It was only taken up last year because of the determination of Frans Andriessen, who became Commissioner for competition in 1981. He wanted to make it clear that the EEC rules on competition also applied to industries such as telecommunications, banking and insurance, which are notoriously uncompetitive. Andriessen is a former Dutch Finance Minister.

BT sequenced in the Commission's decision rather than be taken to the European Court. But the Commission regarded the case as an easy one since it was in BT's interest to handle the extra traffic and thereby earn extra revenue. The traffic is attracted to the UK because transatlantic rates from some other countries are up to four times as high as BT's.

The PTTs have unanimously believed that telecommunications

is a natural monopoly - it was in the public interest, they said, for services to be provided by a single organisation which could use some services to subsidise others, with the aim of attracting the greatest possible number of subscribers.

The principle has been extended to the international scene, where the PTTs have co-operated in minimising the competition between themselves.

This belief is increasingly being challenged as the number of subscribers in the industrialised countries approaches one per household, and as technological developments begin to promise more new devices and services than a single organisation in each country could handle.

The strategy for telecommunications (telecommunications and information handling), drawn up in 1979 by another EEC department - that of industry, energy and research - stated that national PTT monopolies would be inappropriate to

links have been affected too.

In the US, first Satellite Business Systems and then four telex companies have been allowed to set up international links for voice traffic.

In the UK, Mercury has been allowed to set up alternative international links, but only through British Telecom. The liberalisation programme has stopped short of allowing straight resale of telecommunications circuit capacity, and specifically excluded transit services between other countries from the range of value-added network services to be made permissible under the VANS general licence issued last year.

This is where last month's EEC ruling comes in. It is primarily aimed at telex services, and its jurisdiction is only over trade between member states. But the principles invoked are more generally applicable, and telecommunications between member states is ripe for their application.

ANDRIESEN... Determined to get a ruling on BT.

have been hammering away at this for three years, talking to the EEC and CEPT (Conference of European PTTs) about the problems of transborder data flows and high tariffs.

Telespeed's operations manager Maurice Potts said: "We can now act freely without feeling we have a wedge over our heads. We will be able to advance to new techniques at a faster pace without worrying can we do this or can we do that."

Potts said that the bulk of the company's services were to overseas customers and if the ruling had not gone in its favour it would have had to close down.

But despite the extra revenue for the UK and the continued survival of one of its telex bureaux, even greater benefits may go to other countries, according to the competition, Ludovic Briet. "We hope this will be the first step in a much greater opening up of the telecommunications market," he said.

The PTTs are traditionally very restrictive in their thinking. No one should blame BT for infringing, we should recognise that it acknowledged the infringement."

Many other governments were thinking about deregulating their

telecommunications, but it was not happening yet, he added. Meanwhile the Commission was planning to process some more cases against telecommunications authorities, the first of which was expected sometime this year.

Reports have suggested that the Commission has a strong interest in the German Bundespost's policy on modem supply, but Briet refused to confirm this. The Bundespost is changing from a policy of allowing the private supply of modems to one in which it is to be the sole supplier.

Its reasoning behind this is that the advent of digital networks will make modems obsolete, and it wants to be able to replace them all at its own convenience with digital interfaces operating at the same speed. The customers should not even be aware of the difference, and the Bundespost should be able to make the replacement in the most efficient way.

In the case recently decided, the Commission concluded that in contravention of Article 86 of the Treaty of Rome, BT had abused its dominant position in a substantial part of the common market by limiting the activities of the telex bureaux to the prejudice of customers located in other EEC mem-

ber states. BT had limited its by applying discrimination to equivalent treatment to whether the side or outside the UK imposed an obligation on no connection with quality of service.

The Commission is forbidding the lines to relay messages in a dominant position. The development of a prevent the use of and prevent non-existing telecommunications systems.

One of BT's since it was established, the Commission has been a telecommunications authority, it could hardly position by imposing a restriction than that.

The Commission of the opinion that BT privilege related to telecommunications more than to providing used them.

Even if that were BT would still be a Treaty rules on competition of being "a not trusted with the special services of general interest or having the duty revenue-producing."

Such undertakings the rules to the end rules do not obstruct and efficient performance. BT argued that obstructed by those not Commission respect ment, particularly a fact that BT should extra traffic the limited.

Experiencing difficulty with other PTTs not constitute an abuse Commission said. BT agreed with BT's honouring international commitments was an essential duties, this should not to violate Treaty regulations.

The Commission did impose a fine on BT but has been under pressure PTTs to fulfil what are obligations to them, and had not enforced its own disconnecting any bureau.

BT wrote to the Commission saying it was a conflict between of Rome and the Commission on this issue decided to withdraw its ruling in December.

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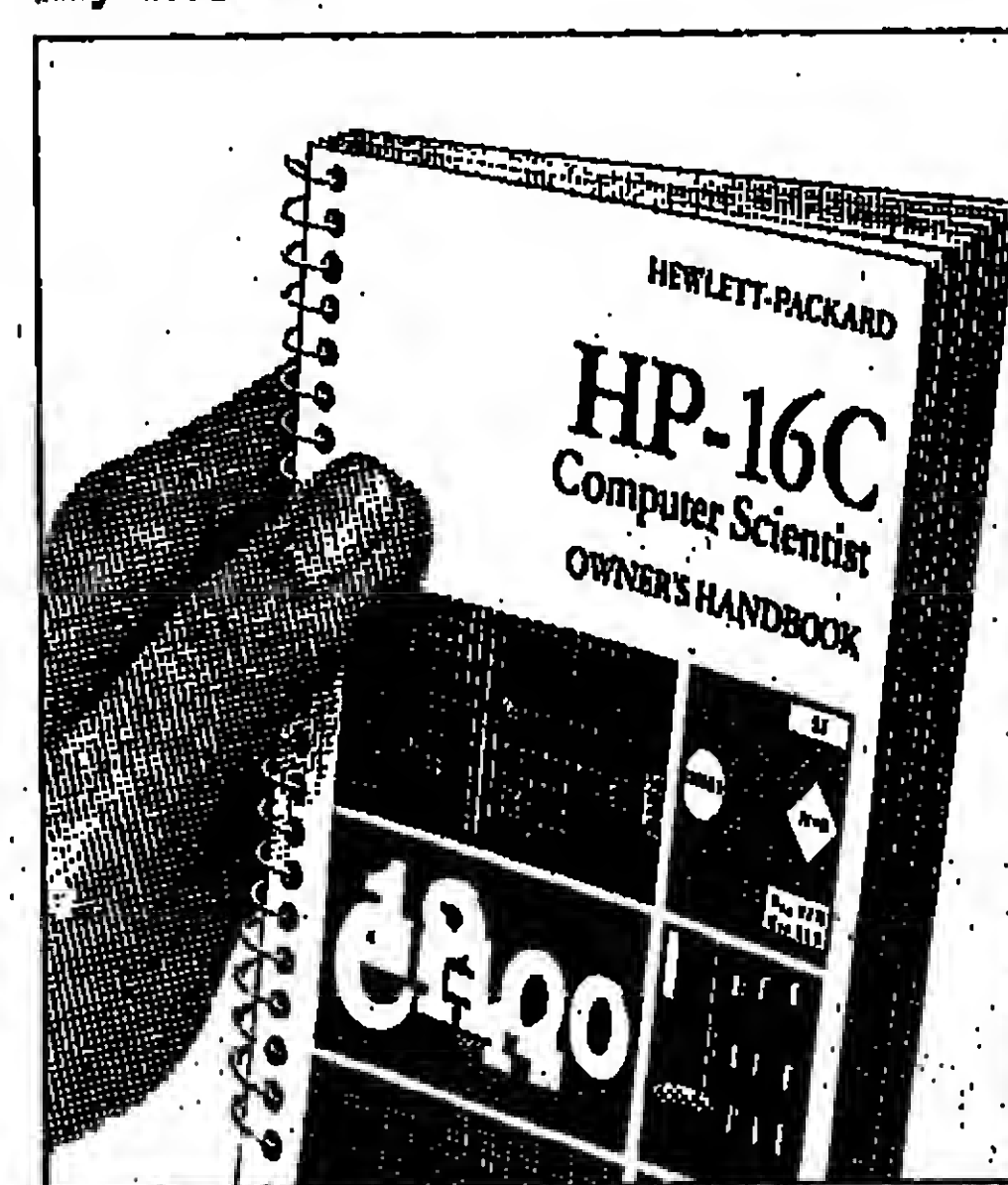
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The HP-16C Owner's Handbook - a complete guide to using your calculator. (HP has won awards in USA for the excellence of its handbooks). Over 130 pages.

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INTERACTIVE VIDEO SYSTEMS

An industry is taking off in the US that could soon bring new manufacturing jobs to the UK, says John Kavanagh

UK chain adopts video industry's latest baby

ANYONE who has popped into Mothercare recently for all the paraphernalia that goes with young children might have noticed a video machine showing film of the company's products being modelled. On closer inspection, the shopper will have seen that different clips of film and sound-track, each covering a different product, can be called to the screen by pressing buttons underneath.

This is the advance guard of an industry which according to its members could bring new manufacturing jobs to the UK and spawn many offshoot companies specialising in programming both for computers and for the small screen.

It is the interactive video disc industry, dominated by small handful of Japanese and US companies. In the US about 30,000 interactive video disc systems have been installed and the number is expected to more than double in 1983. In the UK there are thought to be fewer than 100, most of them in Mothercare shops.

The interactive video disc system is a development of a domestic service which is connected to a television set to show films recorded on discs. The discs are roughly the size of long-player records but recorded and read by a laser beam.

Simple facilities such as fast and slow motion are standard. In Europe Philips is easily the leading supplier with its Laservision machine.

It was a relatively small step in terms of technology for the disc player manufacturers to put in a microprocessor and some memory and dramatically increase the scope of their machines, especially in the training field. The random-access nature of a disc provides a versatile medium for presentations compared with purely sequential video tapes.

As a simple example, training courses are put on disc in the form of films of a lecturer interspersed with clips representing different situations. The lecturer on film can ask the student questions about a situation and "yes" or "no" answers can be given by pressing certain numeric keys on a simple remote control keypad. The read head then moves to different sections of film depending on the answer — for example to the next lesson or to a revision exercise.

The control program for the course is read into the player's 1K memory from the disc as it is



TOMBS... Wants good cash.

loaded. The program can tell the processor to take certain actions at specific film frame numbers. If, for example, a piece of film asking the student a question ends at frame 4,650, the program can tell the processor to stop the film at that frame and await input from the keypad, branching to frame 10,000 for a revision lesson if the input is zero and carrying on from frame 4,651 if the input is one.

Big users of these systems for training in the US include Ford and General Motors, leading banks and IBM.

IBM has put together over 100 discs, which it runs at its so-called guided learning centres. These centres are for training customers in the use of IBM equipment. The player can present film of, say, a financial terminal keyboard and display.

The trainee can use the player's keypad controller to "press" the keys and the microprocessor can switch to different clips of film to show the display after each key depression. IBM points out that such simulation is much cheaper than providing each student with a terminal.

But this is only the start. For the player manufacturers are now adding standard interfaces so that complete microcomputers or even bigger machines can be linked in to control the machines.

The extra power of the external computer has opened up new potential in the simulation field. The computer can handle more input sources and control the player according to data from single or multiple points.

The US Army, for example, has set up a tank simulator to train its drivers. The video disc holds film of the driver's view of different journeys over a stretch of ground. The trainee driver can adjust the speed and direction through mock-up tank controls. The computer interprets the signals from the tank

controls and directs the play read head to move to the film pieces of film and to run as quickly or slowly.

In the US all this involves just two manufacturers Sony and Pioneer Electronics. Early this year Pioneer got a rights to build a system from made by Disco-Vision America which is owned by MCA — an IBM. Following that sale the Vision is largely dormant, only an income from royalties from licensee.

In the UK the market could about to take off. Philips is tight-lipped, but says it is working on an "advanced" machine, complete with a standard RS232C interface for connecting a computer. The product will be launched in 1983.

Thorn EMI is working with Japanese company JVC as machine for industrial use, with links to external devices. July it formed a company with Thorn EMI Video Facilities offer programme production services.

Thorn EMI has a mobile factory in Swindon, put up to make discs for a domestic machine from JVC. The launch of the product was delayed as the recession hit consumer spending but the factory is available if the industrial market takes off.

One UK company, a small consultancy set up purely to advise the use and programming of interactive video disc systems, believes the potential is so great it has been proved in the US. It wants the government to pay some pump-priming money. The company, Videodisc Technology, is run by an industry heavyweight, Don Tombs, who was until last year at Philips, where he spent 12 years. By the end of the period there he was in charge of the office automation products.

"We'd like the Department of Industry to put up some money to bring machines into the UK, like the likes of GEC and EMI to make them and places like London University to do some development programming," says Tombs.

"We've had tremendous success in these systems from colleges, universities and there are many opportunities for UK companies — not only the equipment manufacturers but the software firms such as software and programming consultancies."

Tombs points to Mothercare's success as a hint of the potential. The company tried out the systems in four branches, showing film clips on five very different ranges of products. The result was a 20.1% increase in sales of products in the four shops, an increase which paid for the machines in less than a year.

One disadvantage of having video discs is the cost of the films. "It costs between £1,000 and £2,000 a minute to make industrial film and the discs are more expensive because they are not linear like tape films," says Tombs.

This year the number of interactive video disc machines in the UK is expected to reach 300,000. It is likely that an industry that has spent an estimated £1,000 million on research, development and marketing over the last five years will be looking eagerly towards untapped Europe.

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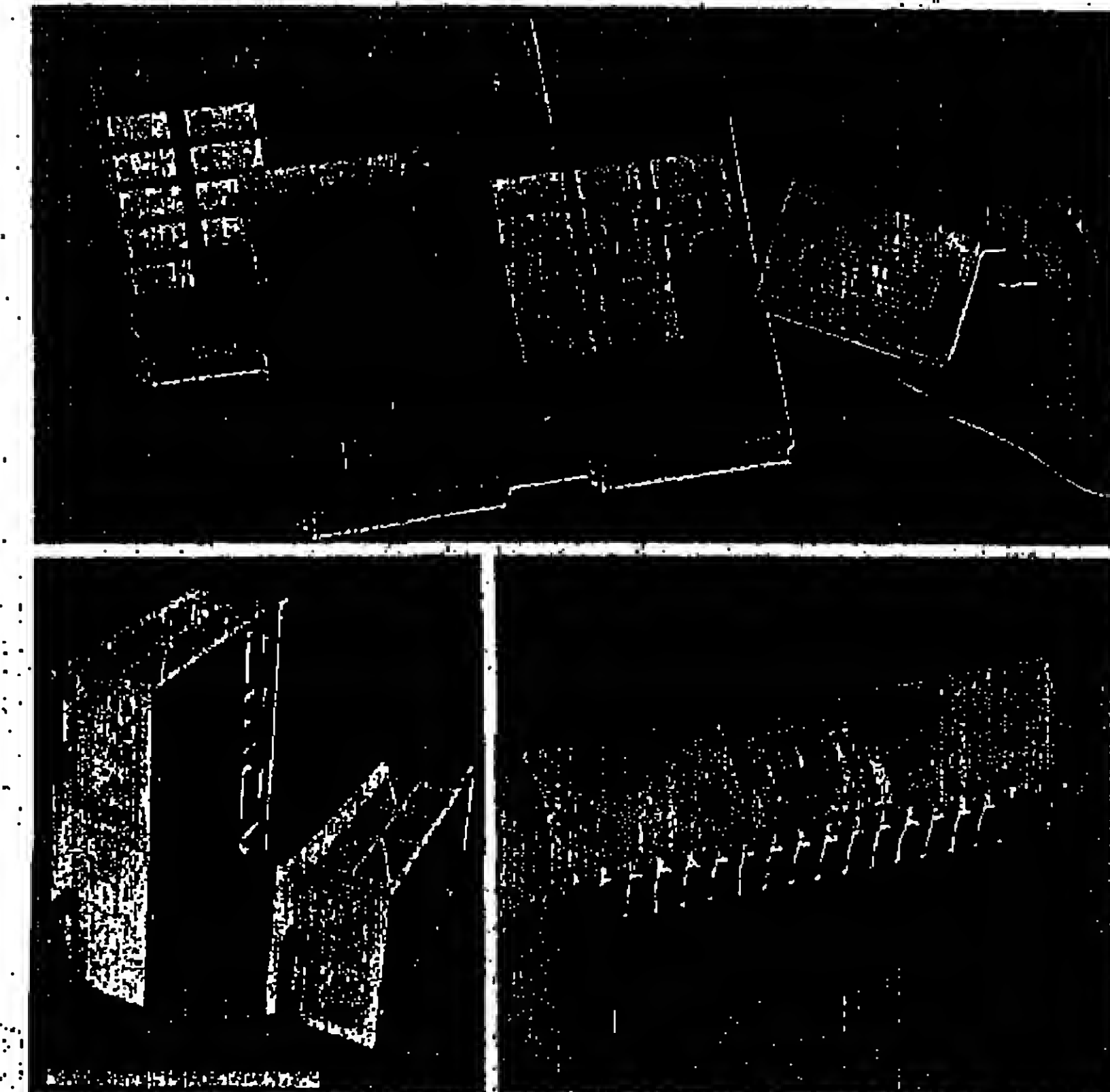
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FERRANTI
Computer Systems

If high technology offers no solution, what use is it?

THE great technology con could have started long ago with UFOs, because some sections of the community have an urge to believe in the incredible, the impossible or the most unlikely. Devotees of the UFO and other cults are fanatics, who spend long hours on proving to themselves — how right they are and, if they're religious, how they are about to save humanity.

The same crusading evangelism is typical of successive ministers of technology and their present day counterpart, the Minister for Information Technology. The same deafness to all pleas that they just might be wrong or misguided, at best, is in evidence. Even convincing proof, as given to a certain section of UFO aficionados, is treated with disdain.

Not so long ago, a group of dedicated watchers kept a month's long vigil at a hill located in the British countryside. The reason? Some time before, a picture appeared in the UFO columns showing very clearly a giant unidentified object. The faithful believed. This picture of UFO was planted by a group of British scientists, not from any spirit of prankishness, but because they wanted to find out just how strong were the beliefs of the UFO fraternity.

The picture they planted was a total fake, obvious to anyone who took the trouble to examine the background objects and ask a few why and wherefore. But there were no such questions. The brotherhood wanted to believe.

The same tendency towards UFO disease is shown in IT82 and in the ever-widening clamour for more computers in schools. Overall the child has no defence against such forced exposure in the same way as he has no defence from having a multiplicity of useless academic subjects stuffed down his throat.

But will the child so taught have any idea of the applications of computers? Will he understand the electronic principles behind them? Would he be able to construct a basic crystal radio set? The principles and basics of electronics and constructing electrical and electronic devices are not going to change. Programming language fashions change almost as frequently as the wind. Programming may be dead in five years.

The same UFO disease is displayed in dealing with industry, except that the message there is more insulting. "You lot of manufacturers know nothing about technology. Apply it, however inappropriate it is, and we'll give you a grant to risk going broke."

There appears to be genuine surprise in the corridors of power that there is no queue to take advantage of this free transistored cake. What these technological creators ignore are timing, marketing and proper backing. If I'm making motorbikes, no amount of modern technology will do me any good, because, at the moment, even the Japanese are fighting each other in a vastly oversupplied marketplace. What is the use of a microprocessor-controlled lavatory if the world has warehouses full of their less well endowed counterparts?

Can the same disease be detected in the minds of those who seek the so-called fifth generation? If that figment ever becomes real, would it stimulate the sect to go on to the search for the sixth generation? What are expert systems except computers applied to areas in which they haven't been applied before? What is artificial intelligence except a display of man's ingenuity and not the computer's?

This same ingenuity leads to the most likely fifth generation, so-called, Hitachi has already shown a computer which will answer "four" in its best computer voice, if asked verbally to multiply two by two. The chances must be good that in the not too far distant future, subroutines will consist, in large part, of human speech and programmers will talk even more they they do now. Typists will become a moribund class. A letter will be printed after receipt over the telephone with no human transcriber.

But none of this will do one whit to solve sales, marketing, and manufacturing problems. It will help the solution's expedition. But it won't solve anything by itself.

And if high technology offers no solution to any nation's ills what use is it?

There has been a great deal of plainly wrong thinking about computers. This can be laid fairly and squarely on the shoulders of those who endow them with mystical and genie-like qualities, which they are far from possessing.

Robert T. Street

PROFILE

Trend-setting comes easily to this wizard fund-raiser

THE Sydney Development Company may sound a bit like an Australian building firm, but it is, in fact, a software house. And a Canadian one at that.

It came into being in May 1978, emerging out of the shell of a mining company, which all seems extremely bizarre for a software house, until you meet the president of the company, Tarnie Williams.

Williams is not so much a software man, more a financial wizard, with a business pedigree as long as your arm. He started off in insurance and investment, before joining the Canadian Corporation for the 1967 World Exposition (Expo '67), where he became project manager.

After that he joined IBM, and ended up creating the company's first computerised project management system, connecting all the branch offices in Canada's Western region and then doing the same in San Francisco.

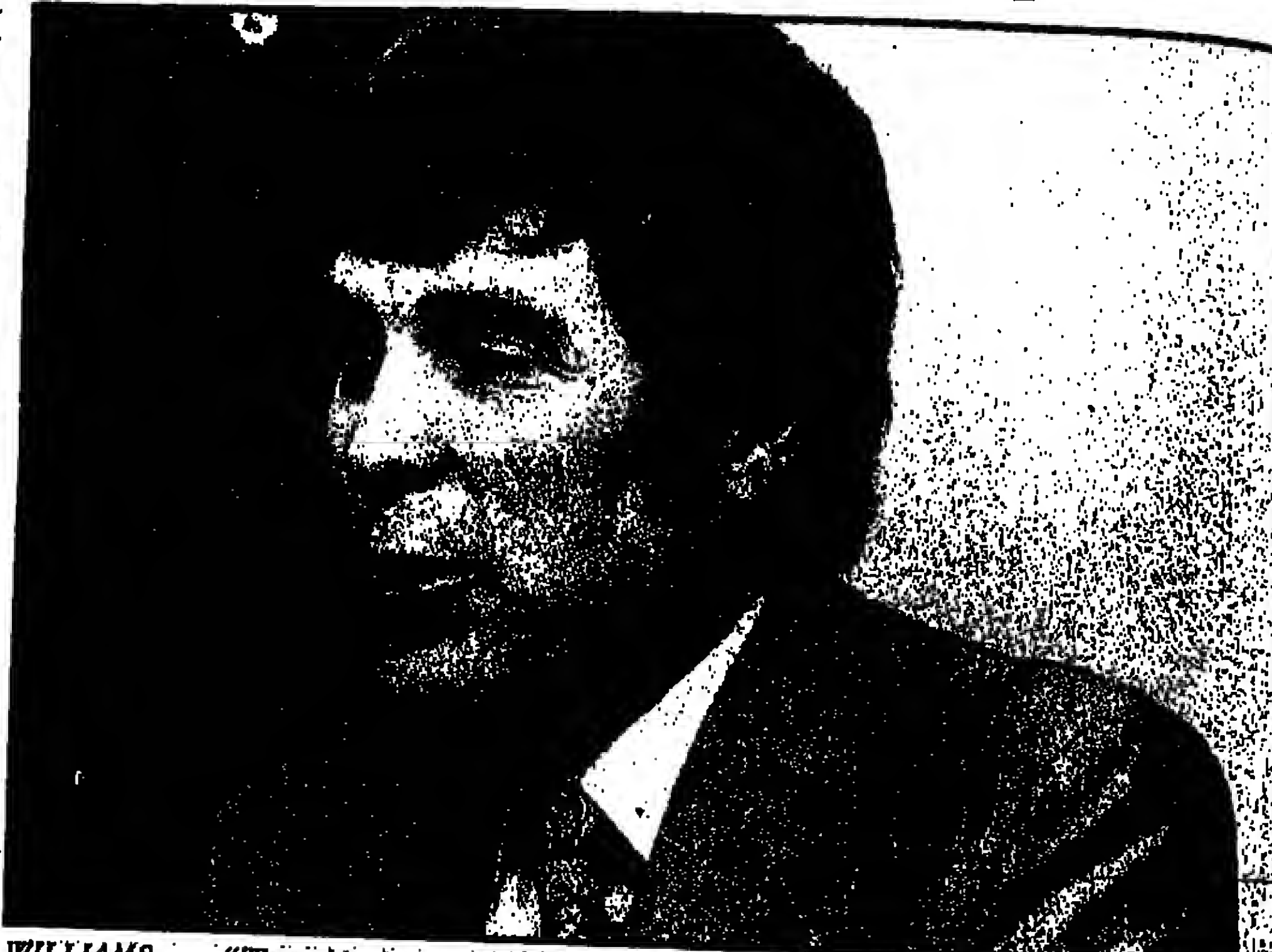
That was not all: he helped set up a planning system for the NASA project that IBM was contracted to perform for the US government, and set up a modified version of it in Nassau in the Bahamas. He also developed a project management course for IBM customers, back in 1971, and then went to work at ICB.

So on to 1978 when he bought the New Chief Mines, a shell company on the Vancouver Stock Exchange, and turned it into Sydney Development. That was when the real financial expertise began.

"We raised \$300,000 through a private placement of the shares and went on to develop Connect 2, a series of automated computer programs which translate data into the formats required by IBM machines."

In December 1980 he made the second fund-raising move by issuing \$1.5 million worth of shares and warrants, and in June 1981 raised over \$1 million on a rights issue. "Most of that money we spent on setting up distribution outlets — eight in the US, five in Canada and one in London, set up in April 1981."

He got an extra half-million dol-



WILLIAMS... "We could take advantage of the UK business start-up scheme."

lars through a further rights issue in December 1981, and in the autumn of that year he floated the company's first tax shelter. That involved selling off units in the firm at \$1,000 each in minimum quantities of ten units, and spending the money on research.

Under the legal terms of the fund, research spending is tax-deductible and there is an additional 10% investment tax credit. As well as the tax shelter provided for the investors, they also have the opportunity to exchange their units for shares in the Sydney Development Corporation.

Sydney was the first software house to use the tax shelter approach for raising capital. The 1981 tax shelter fund raised almost \$8 million, and the 1982 fund was announced in September 1982. The 1981 proceeds were used to finance a real estate software package, a relational database system as an alternative to IBM's SQL.

Williams is certainly good at

that. The latest thing to come out of the Sydney Development is the computer game Evolution, where you start out as an amoeba and have to advance up the evolutionary chain until you end up as a human being. If you manage that you get wiped out by an atomic explosion and have to start again as an amoeba, only this time the evolution process is, not surprisingly, more difficult. The game, developed on an Apple by two Vancouver teenagers, has 99 levels of difficulty.

In North America Evolution will be marketed by Comptel, and Williams is having talks with people like Commodore and Atari in Europe.

"This is Sydney's first entry into the fast growing computer game market and we are confident the Evolution will be the first major international computer game to come out of Canada."

Yet another first for Sydney?

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, January 20, 1983

User reaction is what counts

IF there is any doubt left as to the ascendancy of the microcomputer, the spate of announcements in the first few weeks of the New Year should convince even the most confirmed non-believer that micros are here for real.

DEC has made its play, last week announcing UK dealers and software suppliers for the eight-month-old micros it reckons will make up one-third of its business in three years time. The week before Wang said the same sort of thing, except that the proportion of its micro business will be 40% this year.

IBM has at last released the Personal Computer into the UK officially, and Apple yesterday took the wraps of the long-awaited Lisa.

But this does not mark the end of the line for minis and mainframes. The markets these computer firms are aiming at with their micros are the large company offices, buying machines by the hundred or thousand, not the small business moving to computers for the first time.

Large companies already have their big machines installed. All these micros are going to surround the minis or mainframes, linking into them and to each other, while giving the business user local processing power.

That is why DEC puts so much emphasis on the compatibility its Professional micros have with existing bigger DEC machines. That is why Apple will be offering 3270 emulation when Lisa comes out in the summer. That is why Wang's Professional Computers have built in WangNet interfaces and hardware options allowing them to look like ordinary terminals as far as other Wang systems are concerned.

And that is why IBM will be offering 3270 emulation on its Personal Computer.

The decisions about which machine to pick are going to be made on new criteria. The dependability of the manufacturer, so long a micro bugbear, will be less open to doubt.

The particular programming languages and application packages available will weigh less heavily as more and more of the machines come out offering the same or similar choices.

It is going to be the reaction of users to the actual thing sitting on their desks that will count — and computer managers will have to learn what is wanted, or find the buying decisions taken away from them.

Backing a winner

COMPLAINTS are often heard that the City, being a conservative institution by nature, tends to go for the safe bets, the assured return. As a result, the argument goes, speculative technology ventures get killed off at birth for lack of funds.

Recent experience suggests the theory is unfounded. As our special report on finance shows (see pp.22/25) there is no shortage of funds available for high technology.

Yet there are so many technology horses to choose from that the odds against backing a winner are high.

The most celebrated success story of the moment is Clive Sinclair.

ICL is another company which is not experiencing too much difficulty in raising funds. One year ago, it had to sell a rights issue at par value, that is, 25 pence a share. This time round ICL can command a price of 60 pence a share.

The market price shot up to 86 pence towards the end of last year. The company could have got more if it wanted.

ICL could move more rapidly into profitability if it chose. That the management has cautioned shareholders not to expect a banner year in 1983 is evidence of ICL's intention to consolidate its position for the benefit of the true long-term investor. The return to confidence is due in large part to the leadership qualities shown by Robb Wilmot.

The City is as much prepared to put money on the jockey as on the horse. Without an entrepreneur of some stature to take charge, any technology venture can wave itself goodbye, no matter how promising it looks on paper.

1984 and all that...

THIS week's example of the strange things people say about computers was sent in by John Kavanagh of Wimbledon, who wins £5.

For the three runners up there will be the new Sinclair ZX81. This is a nifty little personal computer which you plug into your television set. I'm not at all sure what happens then. I expect it will bore you about a bit.

LETTERS

Question of probability

IN your front page article on the possibility of using expert systems for social security you say: "In the DHSS application there would be no question of probability — claimants are eligible or they are not" (CW, January 6). The logic involved in this is faulty.

If, having tossed a coin, I try to guess whether or not heads come up, there is certainly a probability involved, even though "either a head occurred or it didn't." Again, probability attaches to a verdict in court, even though the defendant is either guilty or he isn't.

Probability in these cases attaches to the correctness of the judgment we make about a state of affairs, even if, as in the court example, no probability inheres in the generation of the state itself. In the case of judgment concerning social security eligibility, probability is likely to figure prominently.

IAN BIRNBAUM

Head of Statistics & Computing
Ramsey School
Huntingdon

Portability

I READ with interest the David Ferris article on portability in the December edition of Software Month. However, I think he is a little behind the times, possibly because of his dependence on the experience of American companies.

Here at PPL we produce the Ace fixed assets package using the Delta development system, and we have already installed it in over 40 sites in four different countries and on seven different machines. We maintain a single source code on our computer and use Delta to generate correct Cobol for the specified target machine automatically for both online and batch systems.

With an advanced development tool like Delta we have achieved significant improvements in productivity and, most importantly, provided our customers with improved reliability, functionality and adaptability for their systems.

J. J. FLAHERTY

General manager
Package Programs Ltd
London SE1 8HW

Personal

AS a user of microcomputers within the engineering industry, I found your feature on personal computers most interesting (CW, December 16/23).

It is very difficult for serious users of micros to keep pace with developments as most published information is aimed at the cheap hobby end of the market.

A similar feature every few months would, I am sure, be a boon to all. Many engineers are now using standalone micros for increasingly complex "number crunching" formally in the mini-computer field.

A. J. GRAY

Technical engineer
MacIntaggart Scott and Co
Loanhead
Midlothian EH20 9SP

Assumption

M. R. DOLBEAR (CW, December 9) assumes the packed information is in binary. That is not stated in the original report (CW, November 25). If the invention is an implementation of 400,000-ary logic, the claim to compress a gigabyte into 2.5 Kbytes should not be doubted.

Prof TONY GREENFIELD

The Queen's University
of Belfast

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.

Statutory Sick Pay

FROM Cluff Dillaway's informative article on Statutory Sick Pay (CW, January 6) it would seem that the computer industry has failed to appreciate the service that should be offered to the majority of employers. Happily, this is not a true representation of the situation. It is an interpretation of the scene as observed from Dillaway's particular perspective. If an organisation is marketing paper and pencil methods, it may be advantageous to play down those aspects that can be computerised.

It has been obvious since July that there is significant contribution to be made by the marriage of computing techniques to the calculations demanded by the SSP rules. The manipulation of the calendar, the cornerstone in the successful determination of entitlement, is ideally suited to mechanisation if one considers the number of backward and forward looks one needs to take. The accurate determination of entitlement depends to a large extent on knowledge of what has gone before. Computing technology can offer such memory capability at a very realistic cost.

As a result a few companies, my own included, have actively tackled the problem of incapacity recording, entitlement determination and payment calculation. Initial estimates show that operational costs can be reduced by tens of thousands over three years in large organisations and that human error rates will be kept to a trivial level — no small consideration when it comes to dealing with the DHSS enshrined in N1227.

Some computer systems use plain English better than others. Be that as it may, a true expert system is able to elicit the information it needs by asking non-technical questions and then produce clear and accurate results.

Such systems will be operable by non-trained persons — one covering for a colleague on holiday perhaps. The savings in staff training alone will justify the initial capital cost.

The advantage of a standalone micro based expert systems is the freedom it confers on the employer to treat employee sickness as a personal matter and the private "grief" of the individual. The onus placed on employers to accept or reject evidence of incapacity in relation to the work an employee is expected to perform is a serious challenge. Not one to be delegated to the computer bureau round the corner.

Some of us have seen the light. Systems are available. Dillaway can come and see for himself.

J. H. G. SMITH

Director
Shumway Associates
Marlow, Bucks.

Mr Smith has not, unfortunately, explained his definition of expert systems. — Editor.

First government contract

WITH regard to the story, "Revenue Switch" (CW, December 16/23), I would like to point out that the contract awarded to Data Training Ltd to provide IBM conversion for Inland Revenue's programmers in Worthing is the first government contract for IBM training that our company has received. Not as was reported, the first contract we have ever received for IBM training.

PHILIP CORKER
Marketing manager
Data Training Ltd
London EC4A 1BJ.

Telecomms Year

YOUR leader (CW, January 6) stated that "... World Telecommunications Year, handed to it on a plate by the United Nations, has so far been ignored. And that at a time when the word 'communications' is on everyone's lips, if not yet worked out in their minds."

The Institute of Data Processing Management avoids the path of taking public positions but doing little about it. We concentrate on taking action. In March 1982, at the suggestion of Alex Park, our president, we decided to dedicate our 1983 Yearbook to World Telecommunications Year and more than a quarter of the 40 articles which will appear in it will be on the theme of telecommunications.

It will be sent to members as part of our "benefits-to-members" package towards the end of March and available to non-members at £8.75 including UK postage.

EDWARD G. CLUFF
Secretary-General

IDPM
London WC2

Headcount

YOUR piece "The DP Industry Has Shed Its Fat" (CW, January 6), which states that Honeywell UK's computer business (along with other US computer subsidiaries) "shed an undisclosed amount of fat" in 1982, is incorrect.

Honeywell Information Systems' net headcount last year remained at exactly the level of the previous year.

In 1983 the company will continue to recruit for key sectors of its business, particularly for the Customer Services Division where larger numbers will be needed to support continuing growth.

A. WOOD-SMITH
Director External Relations
Honeywell

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April 28-30, 1983

Sponsored by Practical Computing and YOUR COMPUTER

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Make Sure Your Computer Products And Services Are Seen At The Midland Computer Fair.

For the full story contact the Exhibitions Manager, The Midland Computer Fair, IPC Exhibitions Ltd, Surrey House, 1 Throley Way, Sutton, Surrey SM1 4QQ.

Please contact me with further information about exhibiting at The Midland Computer Fair.

Name
Position in Company
Company
Address

THE Midland Computer Fair

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DOWNTIME

THE INFANT SCHOOL VERSION HAS A GRAPHICS FACILITY



nick

Chad's guilty secret exposed

I HAVE been called many things in my time, some pleasant, most derogatory. But even my harshest, cynical shell was rather shocked the other day when I opened a letter.

Dear Sir (it said), You are an arsehole.

Panic gripped me as for one terrible moment I thought my guilty secret was out.

I read on: "You are trying to advance up the evolutionary chain to become a human." Was there nothing of my secret double life unknown to the writer of this terrible letter?

Now a UK firm is (accidentally) trying a new approach: it is running a seminar on a Digital Equipment product which isn't available yet. Computer Age Systems is expecting 300 people to turn up to hear about DEC's long-awaited

new Basic.

"The product has been leaked and talked about for so long that we thought it would have been released by now," said a spokesman. "Perhaps it will be by the time of the seminar in March."

"In the meantime what a sales message we have: 'How to avoid being technologically obsolete — buy tomorrow's information today'."

All will be revealed about DEC's Basic by AI Cnl, an independent guru who has inside information through his work with DEC development teams.

VDUs can hurt your libido

Well it can — according to a survey report from the Equal Opportunities Commission. Men are most at risk, and can become completely impotent, says Ursula Huws, author of the report.

Tomorrow's world

MANY readers will have been on seminars where industry luminaires expound on things like MVS, SNA, VME and other sets of initials. Very useful they often are, too — but usually they cover products that have been announced and that people actually use.

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VDUs can hurt your libido

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Without wishing to give the impression that I have an unhealthy obsession with things snail-like, I feel it my duty, for a second time, to report on a high tech toilet.

A collection of the finest porcelain from around the world, 29 examples of sewage processing system input devices, have been assembled to test the longevity of those jolly little blue loo things which scare the daylight out of you as you gaze into the bowl after a particularly heavy night.

The whole thing is under the control of one man. No, only kidding, a computer. A Commodore activates pneumatic controls to flush each unit at regular intervals.

Down to earth

Chad



Who is being exploited in this photograph? Is it the girl, the monkey or the computer? No marks for those who suggested the curtains.

VDUs can hurt your libido

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Down to earth

Chad

Chad

Chad

Chad

Chad

Chad

Leading-edge OEM products are just part of the story. Wait till you hear about the support we put behind them.



When you're looking for a supplier, obviously you want the most competitive product available — at a competitive price.

But those two things are really just the beginning of a solid, long-term OEM relationship with Hewlett-Packard. We also give you the service, training, documentation, support and the commitment to customer satisfaction that you'd expect from a major international company.

You can be one of our biggest strengths. And vice versa.

Whether you integrate our hardware into your systems, or develop software for specific applications, your special expertise creates entirely new markets.

So we want to make it easy for you to do just that. We start by offering a wide range of products to work with: from fully programmable hand-held computers and desk-top models to complete data processing systems; along with an even wider selection of peripherals that are engineered to work together. That means you won't have to worry about interfacing.

With our modular approach to hardware technology, you can buy boards, boxes, or complete systems, and concentrate on building the products your customers are looking for without taking on any new problems of your own.

We put a lot into our products. And a lot more behind them.

You're probably familiar with the kind of performance and reliability we deliver. But we think you'll be just as pleased to see the level of support we give you.

Since we're interested in solid, long-term relationships, we're ready to put all the strength of our support organisation behind you and your customers. So you can offer site planning and installation; contractual maintenance; per-incident and self-support services.

You'll have the resources of our 170 offices in 39 countries behind your product, on any basis you like. From comprehensive, 24-hour, on-site maintenance to economical 'return-to-us' service.

We do a lot to protect your software investment, too, by making our new products compatible with our earlier models. For example, programs developed more than eight years ago for our first HP 3000 still run on our latest generation of the same computer. So you can upgrade to a much higher-performance system at practically no software expense.

In short, we do all these things with one simple goal in mind: to help you make a profit. Because if *you're* not successful, *we're* not successful. It's as simple as that.

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09/20/89

Curing portable software blues

IF only software were easier to maintain, soaring computing costs might subside, yearn company managers at conferences. Portable software is a particular nuisance.

The key to easy maintenance is the trio of design, documentation and test data. These need extra consideration if the software concerned is to be between different computers.

The design must cater for the languages available on the machines on which the software is to be implemented, known as the target machines. All deluxe conveniences offered on individual machines have to be avoided, and common standard versions of the languages adhered to.

Often it is necessary to split the design into programs that are independent of the machine, and programs like input/output routines that cannot be separated from local idiosyncrasies.

Word processing software can be a particular problem because it exploits the facilities of individual video terminals as well as different processors.

One solution is to build a library

of scripts that describe each change of hardware. The scripts can then be merged as appropriate to change to different equipment.

One way of ensuring that all changes to a portable package will be implemented without error is to use a preprocessor. This allows the programmer to use a dialect of the computer language that is independent of all machines.

Each target computer then has its own compiler that produces the local dialect, into which much of the design and testing effort has to be put.

Preprocessors have often been used for portable software written in Fortran. They have the disadvantage of consuming extra processing time, and producing extra error listings for the user to wade through.

Documentation needs a different emphasis with portable software. Each machine must have its own detailed description of how to implement the programs, with careful avoidance where possible of jargon that dogs the computer industry.

Often authors of the software

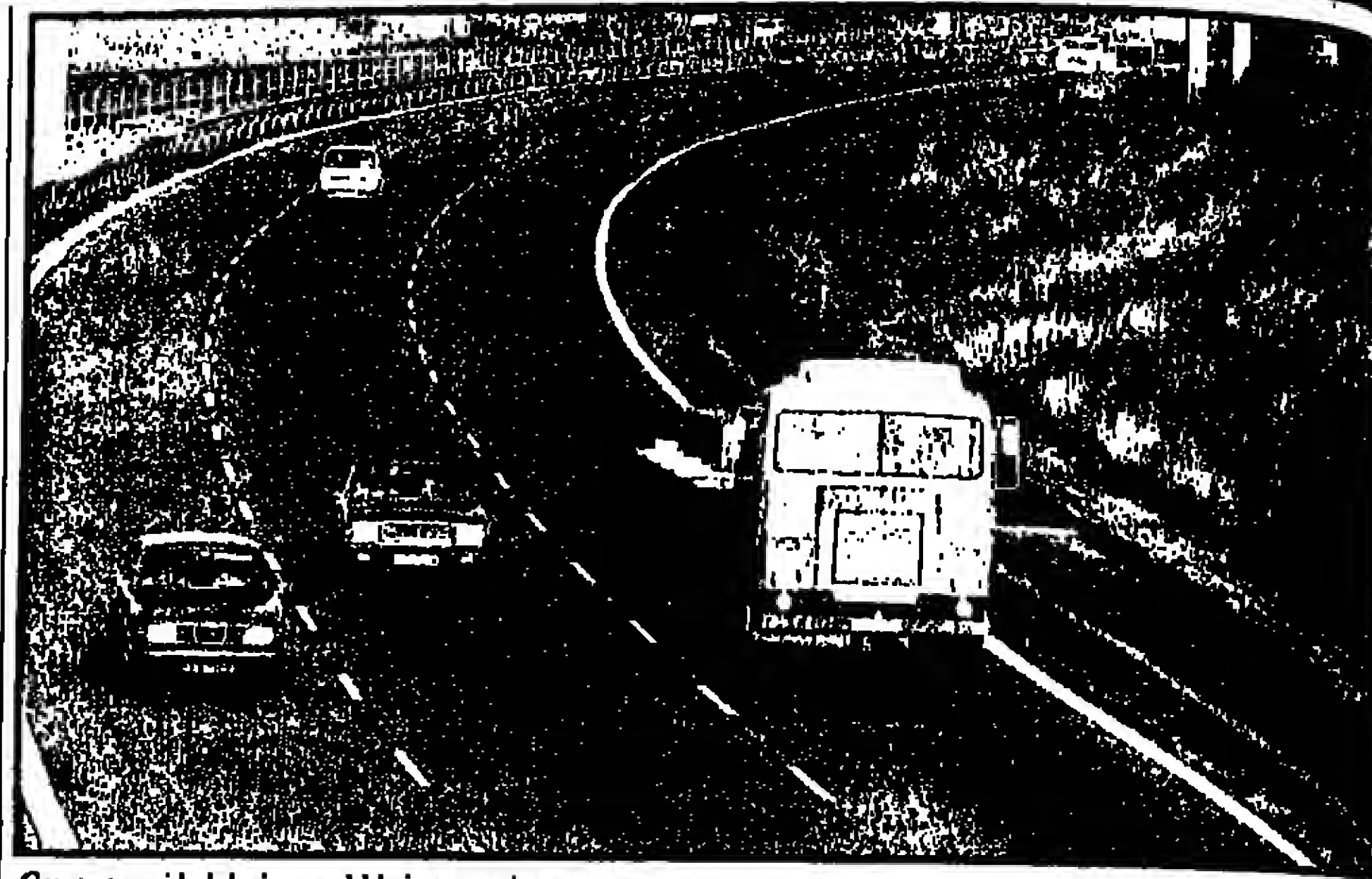
have to assume that certain operating systems and control languages will be available on the target machine. Fair enough, but let it be known in the documentation exactly what assumptions have been made.

Whenever software is installed on a new machine there are bound to be problems. These can be reduced by providing test data sets that demonstrate that a new implementation has been successful.

Adequate test data also gives the implementer confidence that the software has indeed been perfected for the machine.

The test data comes in two groups: static and dynamic. Static testing involves finding out as much as possible without executing the code.

More can be done in dynamic testing. It is possible to generate test data that exercises each statement once for example. Boundary conditions can be checked, and the so-called "off by one errors", when loops of code are performed once too often, or once not often enough.



Computer-aided design could bring us quieter motorways.

Package helps reduce traffic noise

MOTORWAYS are a sore to the eyes, ears and nose. Too bad if you have one at the foot of the garden.

But their ugliness can at least be mitigated by careful landscaping and astute positioning of noise-reducing barriers.

Design of a motorway for minimum noise involves many difficult and tedious calculations ideally suited to a computer. Small

surprise then that a design package called Mway has been written specially for the job by Applied Research (ARC) of Cambridge.

Mway will shortly go into action on the 10-mile section of the Manchester Outer Ring Road. It allows traffic noise to be estimated from fictitious road dimensions along each stretch of road, and positions of barriers, trees, hills and buildings.

The results can induce the design engineer to cut the noise deeper or erect strategically placed barriers to reduce noise. The package can also model the noise of earth mounds worked into operation with the landscape.

"The main benefit is that it takes out a hell of a lot of tedium," explains ARC software consultant Bob Leeson.

Model brings dirty dying lakes back to life

A CYNIC once defined a practical man as the explorer of his father's errors. No doubt victims of poorly designed software would attach this definition to applied systems analysts, whose job is to apply proven tools rather than innovate.

Certainly the applied analyst is taking a nose in a diverse range of disciplines these days, latest in the role of honour being in the control of polluted lakes. In particular shallow lakes, which can be thrown off their ecological balance far more quickly by pernicious human excrement.

Two lakes in particular have fallen under the analysts' lute: Lake Erie on the Canada/US border, and Lake Balaton in Hungary. Erie was condemned as the most

poisonous of the Great Lakes spanning half of North America, and Balaton is the largest lake in Europe.

Both lakes are uncommonly shallow. Balaton is the largest shallow lake in the world, with an average depth of just three metres. Both became a monument to man's crass carelessness of the environment and parts have been declared unfit for swimming.

Clearly a case for the systems analyst. Indeed IASA, the International Institute for Applied Systems Analysis, has already gone to work on Balaton, making models of the effect of weather and rate of pollution on the levels of nutrients in the water such as phosphorus, nitrogen, carbon and silicon.

Man-made pollution tends to increase the concentration of these elements in the water, which causes a boom in algae and small underwater plant life. This plant life is decomposed by bacteria after death in a process that consumes the lake's oxygen. Result: fish suffocate and the lake sinks.

IASA began by using the time-honoured expedient of cutting the problem into manageable slices. Each part of the lake was subjected to detailed analysis of water circulation, sediment disturbance, biochemistry and other factors before being integrated into a larger but sparser model.

The aim was to clean up the lake as cheaply and quickly as possible. The only long-term solution is to divert all the sewage flowing into

the lake, the analysts suggest.

But this would be expensive and could not be completed until the 1990s. Balaton cannot wait so long, since by then it may well be beyond repair. So provisional remedies have been suggested, including sewage treatment.

The IASA model has attracted the attention of the Canadian National Water Research Institute, responsible for Erie, which has similar properties and problems. One of the shared problems is that in shallow lakes sediment is easily stirred up.

Erie has already been somewhat cleansed and now there is a slimming again - at least for the fish.



Computer models are helping clean up polluted lakes.

Both sides claim a victory in unfair dismissal dispute

by John Riley

THE BDP dispute, the longest running industrial dispute at a software house, is moving towards a conclusion.

Last week, an industrial tribunal found that technical writer Jenny Wright had been unfairly dismissed from the Sheffield software house last May. It also ruled that the reason for her dismissal had been redundancy, not involvement in union activity.

Next week the same tribunal will meet to decide whether 17 of her colleagues who went on strike in sympathy have a case.

Both sides in the dispute claim victory. Wright is "very pleased. It would have been better if we had got a ruling of unfair dismissal for trade union activity". BDP's managing director, Richard Jowitt, said that he was "delighted" with the decision. "It was a slap on the wrist for not observing proper procedures".

All the strikers claim that morale had deteriorated among many of BDP's workforce in the months preceding the strike, and that this led to an active interest in joining a union. Several strikers claim that many petty grievances were not acted upon or comment was "a lot of nagging things accumulated".

Some of the programmers wanted to join a union as they felt they had been let down over pay.

Wright, already a union member, was approached by staff and helped organise a meeting with local Association of Scientific, Technical and Managerial Staff (ASTMS) officer Mike Frizelle.

A striker said: "Frizelle sounded moderate and said a strike was the last weapon we would possibly use." As a result 25 of BDP's staff joined ASTMS.

Two weeks later on May 17, Wright was made redundant and told to leave the company forthwith. BDP managing director Richard Jowitt, described as having a forceful personality, claimed that the decision had been taken before he was aware of her union involvement.

The recent industrial tribunal accepted this but commented on the "remarkable coincidence" of the two events. It also commented in its report: "This employer acted in a way in which no reasonable employer would have acted. No reasonable management would have done what this management did".

Both the union and its fledgling members were outraged by the manner of Wright's dismissal, which they interpreted as being for union activity. A striker said: "After Wright was sacked, Frizelle pushed the strike." Another commented: "The consequences were what we expected. We thought it would be over in a couple of days."

Frizelle denies that the strikers were unaware of the consequences. "Nobody was led down a rosy path," he said. He admits that he did not take legal advice over this but claims that he consulted other union officials.

The result was that the 25 union members went on strike. Jowitt gave them an ultimatum to return to work or consider themselves dismissed for breaking the terms of their contracts. Only two went back at that stage.

Later on a further two strikers left the picket line and returned to work. The then chairman of the strike committee, Pete Hopkins, said that they went back to the picket line, accompanied by managing director Jowitt and tore up their union cards.

Several involved in the dispute felt that ASTMS (which is anxious to attract computer employees) did not bring the big gun to bear in the dispute, preferring to leave it as a low-key local affair.

"ASTMS should have taken more interest. The timing was all wrong. This was a one-off case and the union should have done all out to win it. The backing (i.e. of BDP) by other companies was a mistake in the first place. It was a pity that the union made several strategic errors on the strike."



WRIGHT should have been allowed to work out her notice.

'Excuse inadequate for instant sacking'

by John Riley

A SIGNIFICANT ruling by an industrial tribunal last week was that a computer employee made redundant should have been allowed to work during her period of notice.

In its report on the case concerning unfair dismissal at Sheffield software house BDP, the tribunal said: "It was put forward as a reason to justify the failure to consult Miss Wright (the appellant) or to allow her to work during the period of notice to which she was entitled, that confidentiality and sensitivity of the information which came into the possession of members of staff made it necessary to ensure that there was no leakage and that in order to safeguard security it was essential that any member of staff who was dismissed should be required to leave the premises forthwith."

"In the judgment of the tribunal, that is not a special reason for requiring Miss Wright to leave the company's premises immediately in the reason of redundancy."

The tribunal considered that as the appellant had dealt with confidential information and not leaked it, it was improper to suggest that

she would leak it during her notice.

The managing director of BDP, Richard Jowitt, commented: "I don't see that the tribunal decision is in a position to make any decisions - being left people who can't take an objective view, in the computer industry the tendency is to leave immediately because of the safety consideration."

The national organisation of the union ASTMS, Tim Webb, said: "Companies can require an employee to work out notice, but they can't take an objective view, in the computer industry the tendency is to leave immediately because of the safety consideration. The national organisation of the union ASTMS, Tim Webb, said: "Companies can require an employee to work out notice, but they can't take an objective view, in the computer industry the tendency is to leave immediately because of the safety consideration."

A legal adviser commented that an industrial tribunal decision is the same persuasive power as a High Court decision, although it is not binding. All other things being equal one would assume that industrial tribunals would decide a similar issue in the same way, and when the two tribunals disagreed that would be an appeal.

IT is an interesting fact that the times 'X' multiplied by 'Y' gives a product consisting only of 'X' no matter what 'X' is selected to be 'X'.

What is this Magic number? See page 33 for solution.

PEOPLE

Sales director for ICL Traderpoint

ICL has upgraded its Traderpoint operation to division status to boost its third party sales. Taking worldwide responsibility for the new division's activities is Ray Piggott, who has been named director of the Traderpoint Sales Division.

Piggott has been involved in the computer industry for 17 years and has held management posts with Data General and Rank Xerox Data Systems. At Data General, his most recent appointments were as general manager, North-west

Europe and, until joining ICL, as general manager, Asia marketing, based in Hong Kong.

Traderpoint, which was announced early in 1982, has already made agreements with about 200 dealers and software houses around the world. ICL expects at least 15% of its sales to come through the Traderpoint channels of distribution by 1985. The division sells, among other things, the ICL Personal Computer and the Perq scientific graphics workstation.

The newly-formed European subsidiary of Digital Research has appointed Allan Davies as sales manager for the UK, Ireland and Scandinavia. He joins the company from Tektronix Europe in Amsterdam, where he was responsible for graphics products software marketing.



Epson UK has made five new appointments. Ray Bennett, sales manager for LCD and mini printers, has joined the company from Mars Money Systems where he was a project engineer. Marketing services manager is Robert Stowe, formerly sales director with Lowe Electronics. Joining the company as software development manager is Ian Phillips, who was previously with Hugin and Honeywell. David Manuel has been appointed Epson's training manager for dealers and distributors. He was formerly with Wordplex, where he was analyst training manager. Dan Dielhenn, formerly an Apple salesman, has joined Epson as computer sales manager.

Three area sales managers have been appointed at Decima Data (GB). Paul Perera, who will work in the Southern Home Counties and South-west London, joins from Nashua, where he was a regional sales manager. Martin White, who will deal with the Midlands, South Wales and Northern Home Counties, was previously with Storage Technology. Area sales manager for London West and the Western Counties is Mike Jennings, who was previously in sales with Transdata.

Philip Wade, previously of Dulux Paints, has been appointed a director of Propafloor, which manufactures raised access flooring for offices and computer centres.

Errol Mason has joined the newly-formed WordNet Engineering Sources UK as managing director. He was previously technical support engineer at Jascrow Systems Services.



PIGGOTT... Boosting third party sales.

Perkin-Elmer Data Systems' Northern branch manager Keith Reynolds has left the company's Hale office to join its Australian operation. Reynolds, who will be based in Perth, joined Perkin-Elmer as division manager of memory product and terminal sales in 1978.

Advanced Software Technology has appointed David Scott as UK marketing co-ordinator. He joined the company from Turner Electronics where he worked for five years in the marketing department.

Jenny Forrest has been appointed to the newly created position of customer support manager for word and data processing firm Intermet. She joins the company from Monotype Communications where she was a market support representative.

Burroughs Machines has appointed Roger Moss as finance director. He formerly held the same post at British Airways, which he joined in 1974.

Ted Hawke (below) has joined WordNet as sales director. He was previously a director of SBS (Business Systems). Before that he was sales manager of CPT (UK), which he joined from AES, where he was salesman and sales manager.



Nuthain Micro has appointed eight new staff members. Joining the company's printer division are: Jackie Cahill, sales support representative, who was formerly a specialist recruiter of computer and electronics staff; Christine Gibson, also a sales support representative, formerly sales office manager at Shapecut Machines; and Malcolm Brown, who joins from the Currys. In the micro division, four sales people will take care of national accounts: Peter Kelly, who will look after the Midlands, joins from Rank Xerox; Bill Linder, who will look after the North of England, was formerly with Texas Instruments; and Keith Tye and Mark Robinson will take on London and the South of England. Tye was previously with Case and Robinson formerly sold specialist communications equipment. Sales support representative is Jan Sanderson, who was formerly with Texas Instruments and Randall Electronics.

Sir David Phillips, professor of molecular biophysics at the University of Oxford, has been named chairman of the Advisory Board for the Research Council (ABRC). He will succeed Sir Alec Morrison who has held the post since 1979. The ABRC advises the Secretary of State on the allocation of the science budget and on civil service matters generally, with particular reference to the research council system.

Ex-Department of the Environment Systems analyst Pat McGrath (above) has joined Grundy Business Systems as systems advisor for the NewBrain portable microcomputer. He will be helping systems houses and OEM customers to use the NewBrain in a variety of business, scientific and educational applications.

Bd Baumont has been appointed regional sales manager with special responsibility for France at Vermont Research. Paul Callus has been named regional sales manager to increase coverage of the UK market, and to work in Scandinavia.



Ex-Department of the Environment Systems analyst Pat McGrath (above) has joined Grundy Business Systems as systems advisor for the NewBrain portable microcomputer. He will be helping systems houses and OEM customers to use the NewBrain in a variety of business, scientific and educational applications.

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The introduction of the new Statutory Sick Pay legislation is going to create enormous problems for Data Processing Managers. And those problems are going to fall right in those areas that are old favourites of DPM's everywhere, payroll and personnel. You may feel that you've got SSP sorted out. Or that it's not your problem, but that of the payroll or personnel department. Or that it really doesn't represent a major problem at all.

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For instance, we can be certain that if you've been attempting to develop your own SSP systems in-house, you won't have been completely successful. (And if you have been, we'd like to hear from you, because it's taken us a great deal of time, effort and several attempts to develop our software solution!)

We know that you're going to come under pressure from both your payroll and personnel departments to provide answers to their problems. And that your payroll processing and personnel programs are going to have to interrelate as never before. And that you simply won't be able to rely on modifying your existing payroll and personnel systems to meet the statutory requirements of SSP.

Naturally, we feel that you should examine our software solution to SSP. Because we know it works. Based on

our already proven Unipersonnel package, it's on-line and user-controlled, and interfaces not only with Unipay (our own payroll package), but with any other software you may be operating.

But more importantly, we feel that you should encourage your payroll and personnel people to learn more about their (and hence your) SSP problems.

To which end, we're staging a series of seminars to create a full understanding of SSP, its problems and implications. And more importantly, to provide an appreciation of the solution. Your payroll and personnel colleagues would certainly benefit from attending, as indeed you might yourself. The seminars are free, there's no obligation, and we really do think they provide a very valuable insight.

In addition, we've produced a comprehensive video training package, which provides not only a full analysis of the workings and implications of SSP, but a clearly detailed model computer solution. This unique video package is available only from Peterborough Software and provides an invaluable teaching and reference tool for payroll, personnel and DP staff at all levels. Given the problems that SSP could give you, it represents superb value at £750 plus VAT.

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COMPUTER FINANCING



High technology — the new darling of the City

About two dozen computer firms have gone public. Nick Goodway reports

THE growing number of computer companies going public has attracted some scepticism and a lot of envy from others in the industry. But it looks as though investors can't get enough of the high technology action and will pay sky-high prices for companies which don't pay dividends and in some cases are still making losses.

There are now some two dozen computer companies which have gone public. That means their shares are traded on the London Stock Exchange. All but a few (ICL, Act and Case) have appeared in the last two years on the Un-

listed Securities Market (USM) — baby brother of the main market. There are a number of reasons for going public. The initial sale of shares can both raise extra money for the company and give the current owners a chance to realise part of their investment. Many companies make it a mixture of both.

Once the shares are on the market they have a daily value. This means a quoted company can use its own paper to make acquisitions. Applied Computer Techniques (Act), which came on the market in March 1979, acquired another smaller Birmingham com-

pany in August of the same year. The company, Computer Proof, had just made an annual profit of £114,000 but Act paid only £95,000 cash for it. The rest of the price was made up of £300,000 Act shares which were then trading at 200p.

Since then, Act has taken further advantage of its Stock Market listing by having a rights issue. That's when a quoted company asks its existing shareholders to stump up new money by buying new shares in proportion to their existing stakes.

There are plenty of ways of going public.

Firstly, there are two Stock Exchange markets. The main one is the market in listed securities which has existed for over two hundred years. It includes the shares of nearly all big British companies. But two years ago, the Stock Exchange set up the Unlisted Securities Market (USM). This is controlled in much the same way as the main market but has less demanding entry requirements.

The USM was set up both to attract smaller companies than usually come to the main market and to attract the sort of entrepreneurial talent which the main market was often sorely lacking. It began in October 1980 with only 11 companies, but after a gentle start business really began to take off so that now there are about 140 companies quoted on it with a combined value of over £1.0 billion. In 1982 investors' interest in the USM soared taking share prices with it.

The popularity of the USM looks like growing in 1983. There are two major attractions for a company in coming to the USM rather than going for a full listing. The task is less arduous and cheaper. And only 10% of the company's equity has to be sold to the public rather than the 25% minimum on the main market.

Many computer companies also find that the minimum of three years' profit record is easier than the full listing's five. There are even cases when companies can come to the USM without any trading record.

It takes somewhere between six and nine months to get from the decision to go public to the first day the shares are traded on the USM — and it won't be an easy period. The first move is finding a merchant bank which will act as the company's adviser on all the details and co-ordinate the team of auditors, solicitors, stockbrokers etc involved in going public.

They will then crawl all over the company and its books ensuring its suitability for public ownership. But one of the worst ordeals the directors will probably have to go through is making a profit forecast and living with it for those first few months.

There are two main methods of going public. The offer for sale used to be the most common method. In this, the merchant bank buys the shares from the company (either from existing shareholders or buying new shares) and then offers them to the public through advertisements and by publishing a prospectus.

The shares are offered either at a fixed price or, as in the recent Brill offer, by tender, letting investors to value the shares themselves.

popular. This is where the merchant bank and stockbroker sells shares to its own clients at a fixed price. Less advertising is needed but new shares are being issued at a prospectus is published.

Two other methods exist but are far less common. An introduction is when the Stock Exchange permits dealings to start in a company whose shares are already widely held (over 200 shareholders). A re-introduction takes place after a company whose shares are already quoted makes a reverse takeover of a larger or very different company. In both these cases as much information has to be disclosed about the new company.

If going public involves the issue of new shares (which it almost always does) a prospectus has to be published. There are slight differences in what the prospectus must contain between the USM and a full listing but the main requirements are similar.

The prospectus contains the issued capital of the company, its registered address and its directors. It has a brief description and history of the company. With computer companies and all technical companies it is important to include a good non-technical description of the main business.

The most difficult part of the prospectus is the section on prospects, dividends and profits. This will be the directors' responsibility even though the professional advisers will check out any forecast very carefully. Failing to meet a forecast is probably one of the gravest sins in the eyes of the investors.

On the main market a company has to provide the last five years' accounts and balance sheets with an accountants report. This is not required on the USM but nonetheless those companies which can usually provide just as much information.

The prospectus also includes the directors' shareholdings and any other large holdings as well as details of both directors' service contracts and other major material contracts the company has. Finally the company will sign either a Listing Agreement or, on the USM, a General Agreement for the Stock Exchange. This basically says the company will keep shareholders informed of any developments which could affect its share price, prepare a half-yearly and annual report, send the Stock Exchange copies of documents sent to shareholders and pay an annual fee to the Stock Exchange. That is £1,000 on the USM and up to £2,700 for a full listing. Incidentally it also costs a company £600 a year to have its price published daily in the Financial Times.

The cost of going public can vary greatly. A full listing is generally reckoned to take about four per cent of the money being raised with a minimum of £150,000. The USM was designed to be cheaper but has turned out dearer than was originally hoped at an average cost of about £100,000.

But remember it is really the new shareholders who will pay that, and at the moment there still seem to be plenty of cash-rich investors who want to put their money into computers. Go out and get them.

Nick Goodway is technology correspondent for the Investors Chronicle.

COMPUTER FINANCING

Many bank managers are completely lost when it comes to technology. John Campbell looks at sources of finance

If at first you don't succeed — try ICFC

ANY entrepreneur embarking on the quest for financial backing makes his local bank manager the first port of call. The computer man will be no exception. But he should be aware, before he starts, that he may well encounter additional difficulties to those faced by his counterparts in more traditional businesses.

Often, the trouble is purely local. Many bank managers, skilled though they may be at assessing the risks and potentials surrounding, say, retailing propositions, are completely at sea when presented with ideas based on unfamiliar technology.

Ill-equipped to judge their feasibility, many will take the course of least resistance and (as all prudent bankers should) err on the side of caution.

Of course, there are bankers and bankers (most managers have considerable discretionary power over their own lending) — and there's nothing to stop the would-be entrepreneur shopping around. He might strike lucky fairly quickly; but for many, hawking their pride and joy from one bank face to another can prove pretty soul-destroying.

One high-tech entrepreneur was met by a seemingly endless string

Private equity financing, though sometimes only resorted to with reluctance, is in a rather healthier state.

Still dominating the scene — and the most likely destination for anyone not referred to the banks' own equity finance subsidiaries — is the mighty Industrial and Commercial Finance Corporation (ICFC). Set up at the end of the last war with £45 million and still 85% owned by the major clearing banks (the Bank of England has the rest), ICFC now invests over £100 million annually. That makes it the biggest single source of development capital in the world.

ICFC does lend — and was one of the first participants in the Guaranteed Loan Scheme. But the bias remains towards capital investment. Of the 3,750 enterprises under its wing, the Corporation holds equity stakes in about 2,000.

ICFC's remit, of course, is wide-ranging — and there's no discernible bias towards high technology.

There's more "development" than "venture" capital, too, though there are signs of a more adventurous approach beginning to take root. Last year, for instance, the Corporation financed 305 start-ups and a further 440

ted office equipment manufacturers, software houses and instrumentation specialists.

TDC's approach (unlike ICFC's) is firmly "hands on", offering its clients a venture capital package along American lines. In return for a sizeable equity stake, the organisation provides considerable technical and managerial assistance, maintains close contact with relevant technological developments in the US, and generally works hard to see its protégés through to maturity.

Not for entirely unselfish motives, of course. Out of each 10 investments, TDC would expect to see four fail — and to make a return commensurate with the risk involved, has to see at least two turn into clear winners.

TDC is only one of a group of City institutions, including Barclays, Citicorp and Prudential (among others), which collectively form the Finance for Industry group, an organisation taking a particular interest in new firms with ideas to exploit the latest technological developments.

Other big City institutions with long-standing expertise in small business finance include Chartered Bank, Graham Trust and Electra Investment Trust.

The past year, too, has seen a number of new, smaller, and generally more aggressive venture capital operations arrive on the scene. One, APA Venture Capital Fund, set up by Ronald Cohen (who believes the UK venture capital market is still thoroughly immature), maintains close links with both UK and US institutions.

There have also been some interesting link-ups between financial institutions and the universities. One such, Advent Eurofund, was set up in August, a joint venture between US multinational Monsanto, UK finance houses, and a consortium of British universities. A sister organisation of Advent Technology, the Eurofund's brief is to develop suitable European companies to the point where they can mount an assault on the electronics markets.

The smaller private venture capital organisations can, at present, afford to be ultra-choosy, and none is being starved of opportuni-

6 The smaller private venture capital organisations can, at present, afford to be ultra-choosy — and none is being starved of opportunities in the computer field. Getting finances from such sources is a highly competitive business — and is likely to remain so for some time

of refusals as he tried to gain backing for a promising, and highly-researched scheme for manufacturing fibre optic car ignition systems.

Not until he reached London did he get anything like a positive response. Even then, approaches to some 30 potential sources of finance produced just three offers of help.

One would have been enough, of course — and the moral for those with unshakable faith is to keep knocking on doors until one finally opens.

Overall, though, private loan financing of high technology enterprises isn't one of Britain's greatest success stories. A recent report carried out for City fund managers GT Management (and partly funded by the Department of Industry), suggests that the problems lie deeper than the technological ignorance of individual bank managers.

The ingrained bias towards secured lending, for example (as opposed to that based on cash flow projections), works heavily against enterprises long on earnings potential but short on tangible assets. Schemes based on the development of software are obvious potential victims.

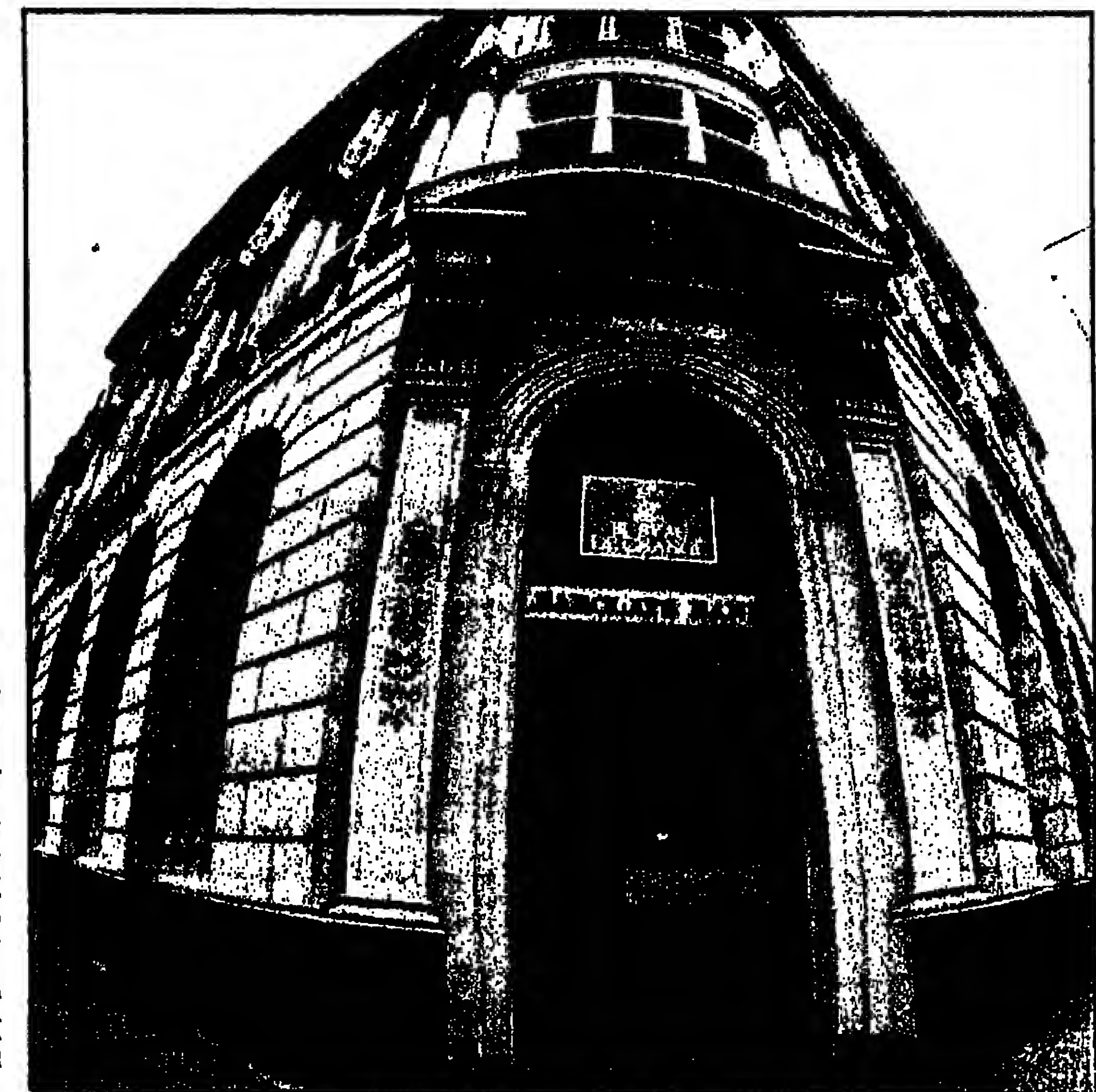
To its credit, the government (ideologically committed to "new" industries, of course) has done its bit to tackle this specific problem. The "Loan Guarantee Scheme", under which the government takes 80% of the risk on its own shoulders, has benefited thousands of firms. That said, banks are obliged to judge propositions according to "commercially prudent" criteria — and there have been some horror stories of technologically-advanced concerns attempting to use the scheme still being thwarted by the banks' conservatism.

In any case, with the borrower forced to pay an "insurance" premium, the scheme is no source of cheap finance and yet, without

enterprises which had been trading for less than three years.

Technical Development Capital (TDC), established two years ago, is a sister organisation of ICFC — though, as yet, very much a minor player by comparison.

TDC specialises in providing venture capital for high technology entrepreneurs. The 20 companies under its wing include computer peripheral and automa-



The local bank manager is often the first port of call for the entrepreneur.

ties in the computer field. Getting finance from such sources, then, is a highly-competitive business — and is likely to remain so for some time.

Nothing ventured, nothing gained, of course. Remember that the government operates a Small Firms Service which can offer

much useful advice on the opportunities currently available. Free-phone 2444 is the number to call.

John Campbell is investment finance correspondent for the Investors Chronicle.

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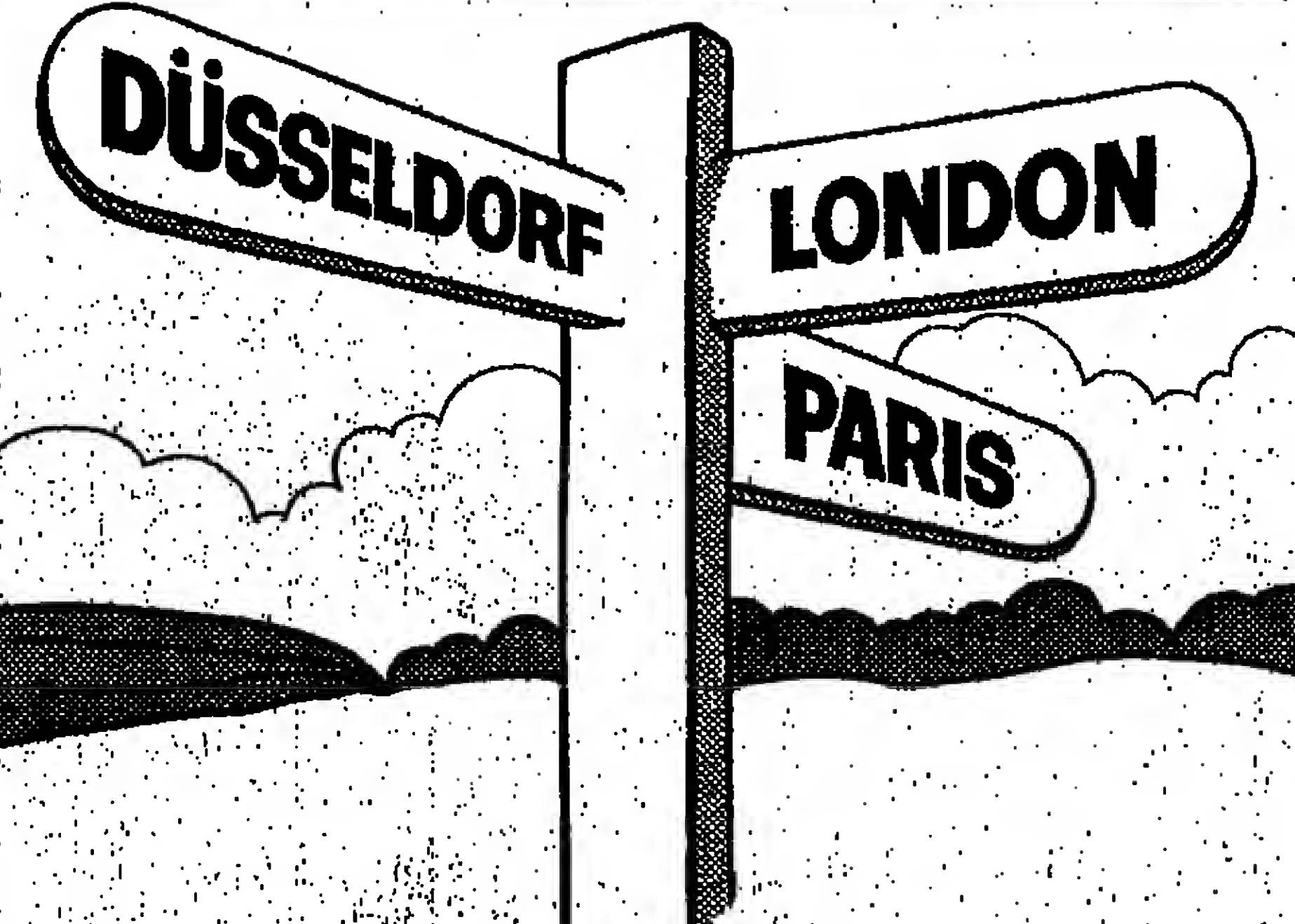


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COMPUTER FINANCING

Clearing banks are cautious advancing funds without safe guarantees. John Robertshaw examines an alternative



ROBERTSHAW... "A lot of money is chasing high tech companies."

Taking a risk is what makes the venture capital firms tick

IF THE search for the right kind of money to fund expansion is a perennial business hazard, it is a particularly sensitive problem in growing high technology companies. Potential financiers have investors eager to place their money in what they perceive to be the industry of the future. And the businessman seeking financial backing is looking for maximum help with minimum interference.

At present, there is a great deal of money chasing the high technology company with the right product and people. Equally, in spite of the increased failure rate of computing companies, the entrepreneurial start-up or large company breakaway is still very much a part of the industry scene. On the face of it, therefore, supply and demand would seem to provide something of a balance.

The fly in the ointment, of course, is the willingness of investors' financial advisers to take the

plunge with the relatively new companies of which, in the main, the industry is made up. It is their goodwill and judgment which potential investors must court in order to attract an investment decision.

This goodwill is essential if the industry is to thrive. By and large, clearing banks are not in the high risk business, and are therefore necessarily cautious about advancing funds without some reasonably safe guarantees. The venture capitalist, however, is looking for capital growth rather than short-term earnings from interest, with sights set on a three to five year period rather than immediate returns.

For money to be locked up for this time requires an act of faith as well as judgment by the investor concerned, and it is important that any company seeking funds recognises this. In return for a limited amount of equity — about 20-30% depending on the level of invest-

ment — a venture capitalist will take a seat on the board from which vantage point he or she can offer advice.

However, a minority holding and one board seat does not take control from the management concerned. They have acquired an equity partner with sound business experience whose views deserve careful consideration but which cannot be imposed. The act of faith in management's ability to produce the right results is a genuine one.

Every venture capitalist knows that where unquoted companies are concerned, the failure rate in terms of return on investment will usually outweigh the successes, but that one major success will more than pay for lacklustre performance in the rest of the portfolio. The name of the game for the investor, therefore, is to be able to spot the Apple of the future and buy into it while it is still relatively cheap to do so.

He has several problems. He has to vet the technology and he has to analyse whether the company's marketing claims are justified. He has to be convinced that the people in the company are winners and only after the indicators for these three elements are positive comes the detailed examination of the business plan.

Any company seeking equity finance should consider some simple rules.

Make yourself known Any investor approached for cash will ask other people for a line on the organisation concerned. There are several ways of making yourself known, and this does not necessarily mean getting yourself talked about in the Press. Possibly more important is making friends with the financial community — making contact and informing people about your activities before you are likely to need the money.

As people become familiar with your aims and thinking, they will be more receptive to a business approach. This is exactly the tactic pursued by the financial advisers themselves — watching, listening, assembling information so that they are ready to act as opportunity presents itself.

They will therefore normally be receptive to the "informal exchange" approach and will often yield invaluable advice on how to deal with the City.

Make a sensible approach A letter and a document are obviously required, whether you make a cold approach, respond to an overture or are introduced by a third party. The document should basically show three things: that the product or service concerned is ahead of the market in terms of technology, price and competition; that you are able to control the business. Too often entrepreneurs are too immersed with the excitement of the technology or sales potential to see the financial pitfalls in front of a fast-growing business. If you can combat these doubts with a profits track record and a good order book you are assured of success.

Be patient Looking at a company to establish its viability, marketing potential and business capability takes time. By planning ahead and getting yourself known, you will help to short circuit the decision phase, but you must still allow those responsible for investing other people's money to do their job. Remember that for them it is far more important to have a modest stake in a successful company than a large percentage invested in a failure.

are personal, but a financial adviser will be looking for the right mix in your management team. Your own ability as a person who can grow a business will, to an extent, be judged on the style with which you work with your colleagues and the strengths that they bring to your organisation.

Those who satisfy the requirements contained in these few rules should have no problem obtaining equity capital. UK investment is becoming more buoyant with American success via the NASDAQ system (America's US\$ equivalent), teaching British investors that it pays to back companies at an earlier stage than that to which they have previously been accustomed.

The name of the game for the investor is to be able to spot the Apple of the future and buy into it while it is still relatively cheap to do so

In the US, this attitude has meant that companies with a small profits record but great potential can be floated. Professional financiers there are far more experienced in vetting smaller propositions. In the UK the tendency is to nurse the companies along and then launch them.

This comparatively adventurous attitude by US security analysts offers excellent opportunities for British venture capitalists and therefore the competition for this money is not just restricted to other UK companies. In UCAT's (United Computer and Technology Holdings) case its US investments, taken via links established through chairman Tom Bisset, have yielded well in a comparatively short time span.

Security Tag Systems, which manufactures electronic article surveillance systems, was floated in April last year at 54p and is now selling at 440p. Cardiac Resuscitator, an investment made in May last year in convertible stock is still showing price increases in its common stock since that time.

As a result of this and other good performers in the UK and US, UCAT's own shares are now trading at 145p compared with about 70p at the beginning of 1982.

From the investment point of view, new companies are often high risk. Too often basic lessons such as the importance of establishing reliable sources of supply are forgotten in the euphoria of the marketing opportunities being presented.

The need to evaluate competition realistically and to protect the customer base by solid distribution and servicing arrangements is sometimes too low on the priorities list.

Any of these factors will cause a venture capitalist to hesitate. He or she develops a sixth sense which is sometimes wrong but more often right. Because the computer industry is still young and filled with more exciting ideas than business experience, the venture capitalist has a valuable contribution to make to emerging companies, and it is with the idea of minority partnership, reaping medium-term financial rewards that specialist investment trusts can help the industry's growth.

John Robertshaw is a director of United Computer and Technology Holdings, an investment trust.

COMPUTER FINANCING

Government incentives spur the computer leasing industry

Peter Hunt reports on the reasons behind dramatic growth in UK leasing

AMONG the main reasons for a dramatic growth in the UK leasing industry are the incentives available to the industry from the government. This is in the way of capital allowances that are provided when a company purchases capital equipment.

Computers fall into this category. The allowances are set off against taxable income before the company's tax liability is assessed.

However, if a company does not have sufficient taxable profits to absorb all of the capital allowances, the tax benefits are delayed and their value as a result is reduced. The effect of this was even more pronounced when the interest rates were high, as was the case until early 1982.

Therefore it is an organisation's lack of ability to utilise the capital allowances that creates the incentive to lease.

Although there are several forms of lease, the two main categories dealt with here are finance leases and operating leases.

Some forms of leasing are evaluated by factors such as obsolescence and convenience. Finance leasing, however, is usually evaluated on a pure financial basis by comparing the cost of hire purchase or outright purchase.

Finance leasing determines the cost of the facility in relation to outright purchase and the relative tax-paying position of the lessor and lessee. A lessee may well be profitable but not paying tax because of his entitlement to other forms of relief. Lessors on the other hand arrange their affairs to maximise their capital allowances and they therefore offer reduced rentals on the equipment or asset by passing on some of the benefits of their allowances to the lessee.

We will examine the subject of capital allowances again later.

An operating lease allows the lessee to terminate the agreement after a relatively short period of time without having to make sufficient rental payment to fully pay out or amortise the capital outlay that the lessor has incurred.

This type of leasing is particularly prevalent in the computer industry and more specifically the IBM computer leasing industry.

In computer leasing the lessor is in many instances a finance company. He is not necessarily the computer leasing company who puts the deal together. The financier rarely takes the residual risk and the lessee is invariably committed to what is effectively a full payout finance lease.

However, the computer broker could undertake to the lessee to make the outstanding payments to the finance company on his behalf should the lessee wish to come out of the lease early.

This looks to the lessee like an operating lease as his option allows him to lease for a shorter period than it takes to amortise the capital cost of the equipment, and the computer broker takes the risk and responsibility for the payment of the remaining cost of the equipment. There is, of course, an element of risk taken by the lessee as he takes a view on the likelihood of the computer broker/leasing company being around to take him out of the lease when the time comes.

In certain instances the computer broker/leasing company convinces the funder to fund him for, say five years, on a particular item of equipment and permits him to lease to a user for say three years. In this event the user has no risk at all and any liabilities rest strictly between the equipment supplier and the main funder behind the deal.

In any event, it is the specialist who takes the risk and the lessee keeps his options open. Should everything work to plan the main

advantage to the lessee is that he can more easily update his computer installation. Computer equipment in particular is subject to technological change and for this reason it is best to let the specialist take the technological and financial risk.

The lessor may be a specialist computer leasing company or the subsidiary of a substantial corporation or perhaps the subsidiary of a bank. Whatever the case, the lessor will inevitably have taxable profits or have access to it if he should only have a limited supply of capital allowances within the constraints of his own sphere of activities.

He therefore buys a computer or computer configuration and uses his taxable profits to obtain capital allowances arising from his purchase. At the same time the lessor leases the equipment to the company.

The incentive that the lessee derives from the ability of the lessor to obtain the tax shelter, is to be funded at a cheaper rate than he could obtain from a bank or even the manufacturer.

The advantage to a user depends precisely upon his current and future tax position and the capital allowances for which the computer qualifies. Many companies have found that the size of their capital investment programme is considerably greater than their current taxable income.

This does not necessarily mean that these companies are unsuccessful. Many highly successful companies, depending upon their overall current investments for future growth, are frequently in a non-taxable position.

The primary incentive being 100% first year capital allowance means that the current taxable income is reduced. However, the future rentals become income which is most definitely taxable. This is in effect deferral of tax and the value of such tax deferral increases when interest rates are high. Consequently high interest rates increase the value of leasing from the lessee's point of view.

Any organisation which is unable to take full advantage of capital allowances should seriously consider leasing. Even companies carrying forward a balance of corporation tax should consider leasing. Companies that have taxable income can profit from leasing if they can acquire an asset early in their financial year.

Some firms have used leasing as a source of financing because it does not appear on the balance sheet and could provide a form of borrowing that increases the firm's overall debt raising capacity.

Sometimes a subsidiary company, subjected to capital constraints by its parent company, uses leasing because it is not treated as capital expenditure. Bankers and financial institutions have long made it their practice to seek out information on leasing commitments.

Their financial analysts often inspect leasing contracts to the debit portion of the balance sheets in order to assess a firm's true position.

The bank's lending and leasing decisions are often based on these types of assessments, not the balance sheets as published in the annual report.

The implications for the lessee are that since no assets are acquired nor liabilities incurred, there is no impact on the balance sheet. Cashflow is saved and the future cost projection is known. Capital is not tied up in depreciating assets and can be redirected into appreciating assets such as bricks and mortar.

The lessee hedges against inflation. His future payments are

cheaper over time and existing bank lines are conserved, permitting the lessee to make full use of its borrowing facilities.

The implications for the lessor are, of course, somewhat different. The finance lessor's interest generally expires at the termination of the lease and the asset comes off the balance sheet at that time. This termination generally takes place in the form of the lessee acting as the lessor's agent and selling the equipment on his behalf, retaining say 98% of the proceeds.

Hence title never passes to the lessee and the lessor's rights to capital allowances are intact. The operating lessor, as opposed to the finance lessor, has an interest in keeping the assets on his balance sheet as long as possible. If his assessment of the residual value of the equipment is wrong and the equipment, in the extreme case, is

worth little more than scrap value, it would be too embarrassing for him to scrap or sell it — it would look horrible on the books.

This sometimes results in a warehouse stocked with obsolete equipment probably worth less than the cost of storing that equipment. The equipment may however look like millions of pounds of assets on the balance sheet, giving the impression of substance where there is none. Massive portfolios can therefore be misleading.

It is reasonably clear that so long as investment incentives continue, firms will have the ability to generate capital allowance in excess of taxable income. For such companies leasing provides an important investment incentive.

Peter Hunt is chairman of Computer Financing International.

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Cobol users stay loyal amid general flux

LAST week, *Computer Weekly* reported users' satisfaction with their mainframe and minicomputer systems. This week we look more closely at how users are using these systems, using the results of the same 1982 Computer Weekly/Datapro survey (see figure 1).

In the survey, users were asked to state their primary programming language, the sources of their applications programs, and the principal applications to which their systems are put.

A comparison of these results with those of last year holds few surprises, but the trends provide an important indication of the overall direction which the industry is taking in these areas.

Cobol remains the main programming language among both mainframe and minicomputer users, while Basic and RPG have lost ground overall. Fortran has made gains in both sectors.

Among the mainframe users, Cobol predominates, being the primary language for 70.9% of the 321 user responses. While there has been a slight increase in the use of Assembler languages and Fortran, PL/I, RPG and Basic are all down on last year (Figure 2).

The decline of PL/I and RPG is largely the result of a big drop in their use by IBM users. The use of PL/I by IBM users fell from 24% in 1981 to 13% in 1982, and RPG use fell from 6% to 3%.

Fewer ICL users backed Basic (the proportion of ICL users dropped from 5.2% to 2.4%) as did fewer from the miscellaneous sector (down from 16.7% to 4%), causing an overall slide for Basic from 2.9% to 1.3%.

Both IBM and ICL mainframe users reported an increase in their use of Fortran as their primary language, and the slight rise in the use of Assembler languages results from a 4% increase by miscellaneous users. Cobol was used more by all users, except those of Burroughs and Amdahl.

Name of manufacturer	User responses* (minimum of 4)
MAINFRAMES	1982 (1981)
Amdahl	7 (3)
Burroughs	9 (27)
Digital	5 (7)
Honeywell	27 (35)
IBM	130 (101)
ICL	83 (77)
NCR	14 (22)
Univac	21 (25)
Others	25 (17)
Total	321 (314)

Name of manufacturer	User responses* (minimum of 4)
MINICOMPUTERS AND SMALL BUSINESS SYSTEMS	1982 (1981)
Burroughs	37 (16)
CMC	7 (14)
CTL	5 (10)
Data General	32 (29)
Point	12 (4)
DEC	101 (110)
GEC	4 (4)
Hewlett-Packard	33 (32)
Honeywell	28 (40)
IBM	104 (112)
ICL	98 (125)
NCR	14 (22)
Nixdorf	6 (6)
Perkin-Elmer	4 (3)
Philips	4 (6)
Prime	18 (26)
Systime	15 (16)
Texas Instruments	11 (6)
Wang	7 (5)
Others	90 (64)
Total	633 (646)

*N.B. Results based on fewer than eight responses are of interest but for statistical purposes should be treated with caution.

Number of participants in

A closer look into results of the CW/Datapro survey, by John Riley, shows how Cobol has stayed on top of the market for mini and mainframe software

Cobol remains the most common primary language among 32.4% of minicomputer users, with no significant changes in overall proportions on last year.

However, there have been changes in the use of other languages. Basic, RPG and Assembler languages are reported as being less used as the main programming language compared with last year, and Fortran as being more increasingly used.

There are fluctuations in the use of the various languages among minicomputer users within these overall trends. There has been a big increase in Cobol use by Data General users (from 28% to 70.6%) and most other users are backing the language, although more modestly (see Figure 3).

Fewer Hewlett-Packard users say they are programming in Cobol (48.5% - down from 71.9% in 1981), and a drop, although less pronounced, in the language's use is reported by Texas Instruments users (to 72.7% from 83.3%).

The increase in the use of the scientifically oriented language Fortran by minicomputer users is due in part to more use by Data General (up to 34.4% from 17.2%), Hewlett-Packard (27.3% from 15.6%) and DEC (20.8% from 18.2%) users.

It has not been easy to account for this increase, but a factor in the change may be that more responses came from users of these three companies' machines who were in the chemical/petroleum and engineering/scientific industries than last year.

The overall number of RPG users is slightly down, from 20.8% in 1981 to 19.6%. Those who are using RPG less include users of IBM (down to 93.3% from 96.4%), ICL (down to 13.4% from 16%) and Texas Instruments (9.1% from 16.7%) minicomputers and small business machines.

Basic has lost support from all minicomputer users except ICL users, and is down overall from 18.6% to 15.9%. A general drop was also reported in the use of assembly languages (from 8.4% to 5.6%).

Users were asked, for the third year running, about the sources of their applications programs and their replies show an overall increase over the three years for most sources (Figure 4).

The number of applications programs written by in-house personnel remains extremely high among mainframe users (95.3%) and is high with minicomputer users (75.7%). In both cases the figure has remained constant over the past three years, although a slight drop is recorded among mainframe users.

The general health of the industry is attested by the steady general increase in the relative number of programs from other sources.

There has been a small increase in the incidence of contract programming in both mainframe and minicomputer sectors, and an increase in the number of proprietary software package purchases, up nearly 20% since 1980 among mainframe users and about 10% by minicomputer users.

The number of "ready-made" programs bought from the manufacturer has increased by 15% over last year in the mainframe sector. More than double the number of Honeywell and NCR users report obtaining programs from this source in 1982 compared with 1981, and the figure among IBM users has risen from 30% in 1981 to 46%.

Datapro will publish the complete results of the survey in a report, *British User Ratings of Computer Systems*. Copies of the report, at 50 pence from each, may be ordered from Datapro, 3000 S.A. CH, 1164, Buchs, Switzerland.

Overall, fewer minicomputer users obtained their programs from manufacturers' personnel, although ICL and Burroughs users went against this trend by small percentage increases.

The ranking of applications of users' machines remained broadly

the same as last year, with accounting top of the list. Some 78.8% of mainframe users and 72.5% of minicomputer users used their computers for accounting, and this represents a small increase over the year.

Payroll and personnel functions

have slipped slightly in the mainframe and minicomputer sections. Payroll and personnel applications are less used on minicomputer systems: order processing and inventory control come above them, with a 5% increase from 52.9% to 57.7%.

Increases have also been reported in sales/distribution and purchasing.

There was a 5% increase in manufacturing applications by minicomputer users, but a slight drop by mainframe users.

On the other hand, scientific and banking applications are down among all users, the most significant drop occurring in banking. There was about a 4% decrease among all users.

Manufacturer	Primary Programming Language						
	Assembler 1982 (1981)	Basic 1982 (1981)	Cobol 1982 (1981)	Fortran 1982 (1981)	PL/I 1982 (1981)	RPG 1982 (1981)	Other 1982 (1981)
Amdahl*	0.0 (0.0)	0.0 (0.0)	28.6 (33.3)	28.6 (0.0)	42.9 (33.3)	0.0 (0.0)	33.3 (0.0)
Burroughs	0.0 (0.0)	0.0 (0.0)	66.7 (88.9)	11.1 (0.0)	0.0 (0.0)	11.1 (11.1)	11.1 (0.0)
DEC*	0.0 (0.0)	20.0 (42.9)	0.0 (0.0)	80.0 (57.1)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Honeywell	0.0 (0.0)	0.0 (2.9)	96.3 (91.2)	3.7 (5.8)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
IBM	4.7 (13.0)	0.0 (0.0)	61.2 (53.0)	3.1 (2.0)	13.2 (24.0)	3.1 (6.0)	4.7 (2.0)
ICL	0.0 (1.3)	2.4 (5.2)	83.1 (88.3)	4.8 (2.6)	1.2 (0.0)	1.2 (0.0)	7.2 (2.6)
NCR	0.0 (0.0)	0.0 (0.0)	71.4 (59.1)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	28.6 (36.4)
Sperry Univac	14.3 (20.0)	0.0 (0.0)	81.0 (76.0)	0.0 (0.0)	0.0 (0.0)	4.7 (4.0)	0.0 (0.0)
Others	4.0 (0.0)	4.0 (16.7)	72.0 (33.3)	12.0 (16.7)	4.0 (0.0)	0.0 (0.0)	4.0 (33.3)
Total (321 responses)	7.2 (6.1)	1.3 (2.9)	70.9 (68.3)	5.9 (5.4)	6.9 (9.0)	2.2 (3.2)	5.6 (4.5)

Figure 2: Primary programming languages - mainframes.

Manufacturer	Assembler		Basic		Cobol		Fortran		RPG		Other	
	1982	(1981)	1982	(1981)	1982	(1981)	1982	(1981)	1982	(1981)	1982	(1981)
Burroughs	0.0	(6.3)	0.0	(0.0)	94.4	(81.3)	0.0	(0.0)	0.0	(6.3)	5.6	(6.3)
CMC*	0.0	(0.0)	85.7	(100.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	14.3	(0.0)
CTL*	0.0	(0.0)	0.0	(20.0)	100.0	(60.0)	0.0	(10.0)	0.0	(0.0)	0.0	(10.0)
Data General	0.0	(10.3)	21.9	(27.6)	70.6	(27.6)	34.4	(17.2)	0.0	(0.0)	3.1	(17.3)
Datapoint	0.0	(25.0)	0.0	(0.0)	9.1	(0.0)	0.0	(0.0)	18.2	(0.0)	72.7	(75.0)
DEC	5.0	(7.3)	41.6	(47.3)	5.0	(5.5)	20.8	(18.2)	0.0	(0.0)	27.7	(20.9)
GEC*	0.0	(25.0)	25.0	(25.0)	0.0	(0.0)	50.0	(25.0)	0.0	(0.0)	25.0	(25.0)
Hewlett-Packard	0.0	(0.0)	3.0	(3.1)	48.5	(71.9)	27.3	(15.6)	6.1	(3.1)	12.1	(6.3)
Honeywell	0.0	(0.0)	0.0	(5.1)	92.9	(92.3)	0.0	(0.0)	7.1	(0.0)	0.0	(0.0)
IBM	0.0	(0.0)	1.0	(2.7)	4.8	(0.0)	0.0	(0.0)	93.3	(96.4)	1.0	(0.0)
ICL	18.6	(22.4)	1.0	(0.0)	62.9	(55.2)	0.0	(0.0)	13.4	(16.0)	4.1	(5.6)
NCR	0.0	(0.0)	0.0	(4.6)	100.0	(90.9)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Nixdorf*	0.0	(0.0)	100.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Perkin-Elmer*	0.0	(0.0)	0.0	(0.0)	75.0	(66.7)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Philips*	25.0	(12.5)	0.0	(0.0)	50.0	(50.0)	0.0	(0.0)	0.0	(0.0)	25.0	(25.0)
Prime	0.0	(0.0)	5.6	(15.4)	38.9	(23.1)	55.6	(57.7)	0.0	(0.0)	0.0	(3.9)
Systime	0.0	(0.0)	88.9	(93.8)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(6.3)
Texas Instruments	9.1	(0.0)	0.0	(0.0)	72.7	(83.3)	0.0	(0.0)	9.1	(16.7)	9.1	(0.0)
Wang*	0.0	(0.0)	0.0	(20.0)	100.0	(60.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Others	10.2	(4.4)	18.0	(26.1)	11.9	(8.7)	12.9	(26.1)	4.9	(0.0)	59.8	(34.8)
Total (633 responses)	5.6	(8.4)	15.9	(18.6)	32.4	(32.3)	9.9	(8.8)	19.6	(20.8)	11.6	(10.3)

*Fewer than 8 user responses.

Figure 3: Primary programming languages - minicomputers and small business systems.

Sources	1982	Mainframes (1981)	1980	Minicomputers & SBC's (1981)	1980
In-house personnel	95.3%	(97.4%)	[97%]	75.7%	(75.8%)
"Ready-made" programs from the manufacturer	51.4%	(35.6%)	(47%)	40.4%	(33.6%)
Proprietary software packages	52.6%	(46.8%)	(34%)	35.9%	(33.5%)
Contract programming	32.7%	(29.8%)	(26%)	35.9%	(33.5%)
Manufacturer's personnel	9.7%	(9.0%)	[7%]	6.3%	(7.4%)

Figure 4: User rankings of sources of application programs.



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The rest is up to you.

1. A total memory capacity of 64K, 38K directly available to BASIC. When not using BASIC a full 64K is available for machine code programs.
2. Interface adaptors will allow the use of a complete range of hardware peripherals including

disk units, plotter, dot matrix and daisy wheel printers, Prestel communications, networking and much, much more.

3. A complete range of business software including word processing, information handling, financial modelling, accounting and many more specific application packages will be available.

4. Other computer languages such as LOGO, UCSD PASCAL, COMAL and ASSEMBLER are being developed. Existing VIC and 40 column PET BASIC programs can be easily converted.

5. The powerful sound chip gives 3 totally independent voices each with a range of 9 octaves. User control over music envelope, pitch and pulse shapes provides the ability to make your Commodore 64 sound like a variety of musical instruments, solo or in harmony.

6. 62 predefined graphic characters plus full alpha numerics with upper and lower case letters, all available directly from the keyboard

and displayable in normal or reverse video in any of 16 colours.

7. 40 column by 25 lines colour display. In high resolution graphics mode, a bit mapped screen gives 320 x 200 individually addressable pixels.

8. The dedicated video chip allows the use of high resolution multi-coloured "Sprites" (moveable object blocks). Sprites can be moved pixel by pixel, independently of anything else on the screen.

9. Sprites can also be set up in 8 "layers" giving full 3 dimensional effects with, if required, automatic collision detection between sprites and any other screen object.

10. Machine bus port will accept ROM cartridges for many applications, including business, educational, home and leisure software.

11. A second processor option using the Z80 gives the Commodore 64 the ability to support CP/M.

HOW COMMODORE PIP'S APPLE.

FEATURES	COMMODORE	APPLE II+
Base Price	£299*	£499*
ADVANCED FEATURES		
Built-in user memory	64K	48K
Programmable	YES	YES
Real typewriter keyboard	YES (66 keys)	YES (52 keys)
Graphics characters (from keyboard)	YES	NO
Upper & lower case letters	YES	NO**
Function keys	YES	NO
Maximum 5 1/4" floppy disk capacity per drive	170 K.B. to 1 M.B.	143 K.B.
AUDIO FEATURES		
Sound Generator	YES	YES
Music Synthesizer	YES	NO
Hi-Fi Output	YES	NO
VIDEO OUTPUT		
Monitor Output	YES	YES
T.V. Output	YES	EXTRA
INPUT/OUTPUT FEATURES		
Cassette Port	YES	YES
Intelligent Peripherals	YES	YES
Serial Peripheral Bus	YES	NO
ADDITIONAL SOFTWARE FEATURES		
CP/M* Option (over 1000 packages)	YES	YES
External ROM cartridge slot	YES	NO

*EXC. VAT - DETAILS CORRECT AT TIME OF GOING TO PRESS

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CP/M* IS A REGISTERED TRADEMARK OF DIGITAL RESEARCH, INC.



For more information on the powerful new Commodore 64, and the address of your nearest Commodore dealer, telephone or write to us at:

The Commodore Information Centre, 675 Ajax Avenue, Slough, Berks SL1 4BG. Telephone: Slough (0753) 79292.

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Both Basic and RPG appear to have lost ground to Fortran.

How the survey was organised

QUESTIONNAIRES were sent to 5,000 of *Computer Weekly*'s subscribers in September.

The objective was to gather pertinent information about each system, such as: method of acquiring the computer, date of installation, the number of remote/local workstations, location of the computer, disc storage and memory, capacity, and integrated word processing functions.

We also elicited information about the user's operation, such as: type of industry, principal applications, source of applications programs, primary programming language used, and acquisition, implementation and replacement plans for the next 12 months.

The real core of our survey, however, is the section where users are asked to indicate the advantages and disadvantages of their systems; to rate various aspects of their system, its software and vendor support; to evaluate how much, if at all, the system lived up to their expectations; and to make recommendations to other users.

Be aware that responses may be coloured by individual variations in expectations, different applications, the operations environment, and the quality of service and support provided by the vendor's branch office.

Also bear in mind that technical support, software and/or peripheral equipment may have been obtained from outside sources.

Computer Weekly sent 5,000 questionnaires to a random sample of subscribers. A total of 1,041 were returned, initially screened and forwarded to Datapro for further processing.

At least four responses were required for a model to be individually featured in our tables. Most models without the required number of responses were included, however, in more general categories, such as: "other models" or "other vendors". A few could not be combined with others and were rejected.

Of the 954 responses that we used, 321 evaluated mainframes, and 633, minicomputers. Participating in the survey were 928 users. Of these, 47 rated 2 models, 23 rated 3, 5 rated 4, and one rated 6. Each model in these cases was rated on a separate copy of the questionnaire.

Weighted averages were computed in a manner similar to college grading systems: "Excellent" was weighted as 4, "Good" as 3, "Fair" as 2, and "Poor" as 1. Each rating was multiplied by the corresponding weight, and the average was taken by dividing the sum of the products by the number of responses for that category.

The first group of questions asked the users to identify the manufacturer and model, the month and year of acquisition, and the method of acquisition.

A second group asked the users to identify their type of industry, their principal applications, and their source(s) of applications software.

A third group inquired about the hardware and software configurations, about any acquisitions or implementations planned for the coming year, and whether replacement or expansion of the computer systems was planned for the coming year.

Next, users were asked to rate their systems on: ease of operation; reliability of the peripherals; maintenance service (responsiveness and

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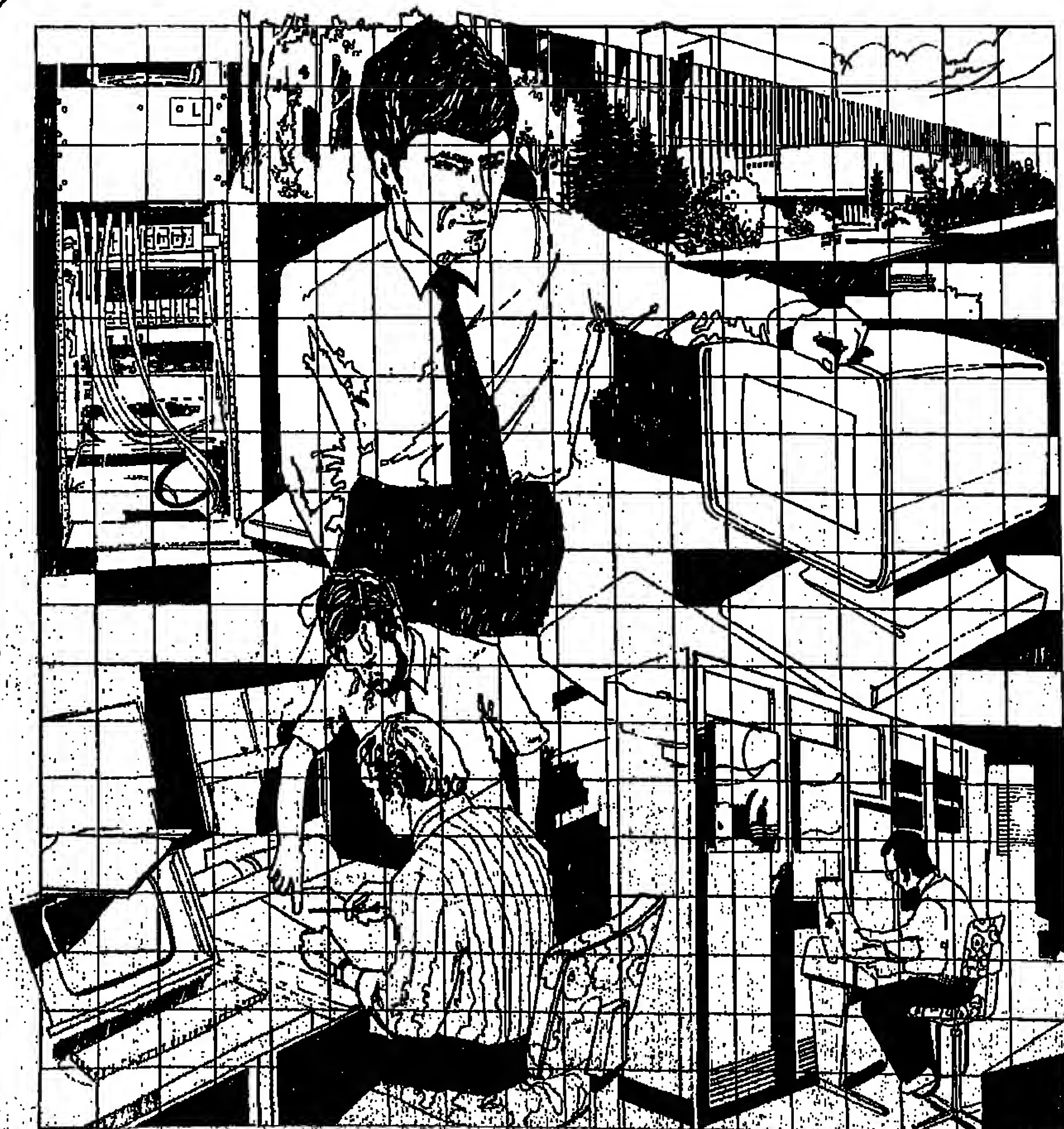
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This is an excellent opportunity to join an interesting and exciting company who are constantly developing and expanding their business into new areas of activity and we are therefore able to offer a wide scope of opportunities for people wishing to develop their careers. Ref: 2001/A

Programmers

North London £10,000-£12,000+

Our client is concerned with the provision of sophisticated on-line transaction processing systems to banking/financial organisations.

A major programme of new applications development, based on large ICL 2800 processors, has created vacancies for keen and enthusiastic programmers with sound ICL COBOL experience, preferably gained in an on-line environment.

An attractive salary is offered together with a range of generous benefits which include profit-sharing, non-contributory pension, free life assurance, subsidised staff restaurant and house purchase assistance. Ref: 2001/B

HP Opportunities

London/Bucks £7,750-£9,000 + Car

The U.K. computer services centre of a multi-national software group is seeking additional programmers to strengthen project teams involved in the development and support of sophisticated commercial and financial systems.

Experience must consist of at least 12 months' programming in an HP 3000 COBOL installation. Client contact is an integral part of the work and the successful applicants will have initiative together with the personality and confidence to represent the company in a professional and business-like manner.

Excellent career prospects are complemented by an outstanding benefits package including relocation. Ref: 2001/C

For further information, write to Computer Professionals quoting the advertisement reference no; alternatively phone Isobel Bruce or David Fletcher on 01-584 8790.

CP Computer Professionals looks after the professionals.

Allied-Lyons PLC, the largest food and drink Company in Europe, has vacancies in its Group Telecommunications Services Department based in Burton-on-Trent.

Networks Design Engineer (Data)

The successful applicant will be required to assist in planning, developing and implementing voice and data communications networks for the Allied-Lyons Group of Companies. This will involve critically examining existing network facilities and making recommendations to provide more cost effective and efficient communication systems.

The job entails travel in the U.K. and a Company car will be provided.

Telecoms Consultant

The Telecoms Consultant will join a small team responsible for providing a specialist service covering all aspects of telecommunications (e.g. voice, text, facsimile, data etc.) throughout the Group. The job holder will be required to recommend and implement accepted proposals designed to improve the efficiency and cost effectiveness of the communication system.

A number of years' practical telecommunications experience in a large commercial organisation is essential.

Applicants for both positions should be educated to HND/Degree level in a technical/engineering subject. Attractive starting salaries will be offered together with the normal range of benefits associated with a large Company. Assistance with relocation expenses will be available where appropriate.

Applicants, male or female, should write or telephone for an application form to: Mrs C. M. Lane, Personnel Officer (Central Staff), Allied Breweries Limited, 107 Station Street, Burton-on-Trent, DE14 1BZ. Telephone No. Burton-on-Trent 45320 Ext. 2309.

ALLIED-LYONS

(2248)

PROGRAMMERS

c£10,000 p.a.

Data Laboratories Ltd, part of the Bell and Howell Group, has vacancies for Computer Science or Electrical Engineering graduates with two years' programming experience to work on microprocessor controlled Instruments and Video displays. Experience of PL/M 86 or 8086 Assembler Language an advantage.

Write enclosing c.v. to:

The Chief Engineer
Data Laboratories Ltd, 28 Watney Way
Miltonham, Surrey

(2172)

Lothian Regional Council STEVENSON COLLEGE OF FURTHER EDUCATION LECTURER B IN COMPUTER STUDIES

Salary on Scale: £7314-£9618

required in the Department of Computing and Micro technology to teach a range of courses in computer application, operations, programming awareness. Applicants should have relevant practical experience and possess a degree or other relevant qualifications. Application forms and further particulars from:

The Principal
Stevenson College of Further Education
Bankhead Avenue, Edinburgh EH11 4DE

(2249)

CAMBRIDGE CITY COUNCIL

Systems Analyst

Salary up to £10,071 (S01/2)

Applications are invited from suitably experienced persons for this new post in the City Treasurer's Department. The successful candidate will be involved initially in the development of new financial systems based on GL Plus for which training will be available.

The Council has recently installed an ICL ME29 which will shortly be enhanced to cope with increasing demands by user departments for on-line information developments. This post offers career development in an attractive environment. Cambridge being the regional centre and an international tourist attraction. A contribution towards relocation expenses and the provision of temporary housing accommodation is available in appropriate cases.

Application forms, returnable by 26th January, 1983 are available from City Treasurer, The Guildhall, Cambridge, CB2 3QJ. (Tel. No. 2223 35977 Extn. 301). The Council is an equal opportunity employer.

(2230)

University of the Witwatersrand, Johannesburg COMPUTER SCIENCE SENIOR LECTURER

Applications are invited from suitably qualified persons, regardless of sex, race, colour or national origin for appointment to the above post, in the Department of Computer Science.

Candidates from all areas of computer science will be considered; however, computer systems, operating systems, architecture, and software engineering are of particular interest to the Department. The Department teaches courses in Computer Science at both undergraduate and postgraduate levels. Research is carried out in the areas of Computer Science in the Department. The successful candidate will be required to teach a range of courses in computer science and to supervise the research activities of students. The salary will be within the range R18 557-R24 045 per annum. The salary scale of appointment will be determined according to the qualifications and experience of the successful candidate. Under certain circumstances a salary reduction may be payable. Benefits include a pension scheme, medical aid, and housing subsidy (if applicable). (C) - R173 approved. The University will pay the return airfare of the successful candidate. The successful candidate should submit the following information in his/her application: a curriculum vitae, a list of references, a list of publications, a list of awards, and a list of degrees. The application should be sent to the Director of the School of Computer Science, University of the Witwatersrand, Johannesburg, 2001, South Africa, with whom applications should be lodged by 22 March 1983.

Practical Computing

SALES EXECUTIVE

We currently require a bright enthusiastic to join one of Britain's leading Personal Computer publications. You will be selling a complete advertising package to our advertisers and their agents, including space at our very successful COMPUTER FAIR exhibitions.

Experience of both direct and telephone selling, preferably within publishing, would be a distinct advantage.

Knowledge of personal computers although desirable is not essential.

Salary range £8,300-£8,800, company car provided.

Applications with CV should be addressed to Mr. Garry, Advertisement Manager, Practical Computing, Room L310, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AB.

Please state you are aged 18 or over and are a resident of the UK.

Practical Computing is a subsidiary of Business Press.

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Comms. S/W Design

Herts. to £12,000

Develop your career and your existing communications software skills by joining a company already firmly established in this high growth sector of the computer industry. We are seeking software people with experience in developing 3270 compatible systems and as much experience as possible in X.25 and L.A.N. products. Experience in 'C' or PASCAL using M6800 and/or T19900 would be useful.

Technical Authors

Wiltshire/Herts. £9-11K

Candidates will need to have a minimum of two years experience writing manuals in a computing environment. They must be capable of designing and developing documentation sets for newly developed hardware and software. The job will involve working closely with programmers and engineers to prepare manuals for technical and non-technical users. Degree preferred. Reloc. possible.

Micro Development

Camba. £8-£10K

An important and growing application area for micro based systems is in portable data capture devices. Our client is building a team of development staff who are working on new products in this area. If you have a minimum of two years experience programming micros, or minis using an assembler and a high level language please apply.

Software Support

W. M'sex. £12-14K + car

Take this opportunity to join one of the most successful computer companies of our time. You will need several years technical software experience to include: real time, data communications and/or database systems. Analysts with banking or financial systems experience would also be of interest. You cannot fail to be impressed by this client. Higher salary but no car for City office location.

Satellite Telecomms.

Beds. £8-11K

The growing sector of computer communications is being further extended by the advances in satellite communications systems. Our client is a major force in this newly expanding area of technology. We would be interested in meeting software and hardware designers to participate in major development projects for worldwide systems. Degree and minimum 2 years micro or mini systems experience.

Real Time Software

Hants. £10-15K

Major new projects involving the application of powerful superminis are being undertaken by our client. Their continuing success is due to excellence in project development techniques and control. A range of work is available to stretch your capabilities. DEC and Tandem experience would be particularly useful. Candidates must be prepared to spend time on client sites.

DEC Comms. Software

Surrey £9-12.5K

A successful City firm is expanding a small development team working with DEC VAX and PDP equipment. Candidates with software experience gained with VMS, RSX11, UNIX or similar using Assembler and/or Fortran are required. Areas of interest are message switch, data comm., teletex, X.25 etc. The company is moving to Woking in February 1983.

Digital Designer

S. M'sex £8-11K

If you would be excited by the challenge of working for a small but highly successful design company, this is your chance. Candidates must be capable of Assembler level programming when required. However, the main requirement is for a Digital/Micro designer. You will be impressed by the company's record and will need to be of above average ability.

Project Manager

Berks. to £16,000

This is an exceptional opportunity for a bright, technical software person to enhance their career. Our client, a successful engineering/manufacturing company is developing applications on their HP3000. Candidates must have a background in systems software, or real time applications gained in a mini computer environment. HP3000 not essential. Preferred age early 30s. Excellent co. benefits including reloc. assistance.

Programmer Analyst

City £8.5-11K

An expanding, mini computer based, business systems development group is seeking an additional programmer/analyst to join their team. Candidates must be degree level and have experience in commercial applications development. Knowledge of Wang/COBOL and/or DEC/DIBOL is required. This is a prestigious international company offering excellent career development prospects and attractive company benefits.

Programmers/Engineers

Wiltshire/London to £12K

A major company in the development, manufacture and marketing of micro based distributed office systems is seeking to expand current development teams. Experience of PL/M-86, or 'C' useful. Vacancies exist for team leaders as well as implementors. Projects cover W.P., comma, L.A.N. This is an exciting and attractive sector of an expanding market. Reloc. assistance possible.

Programmers Minis/Micros

Berks. £7-12K

A successful company with a product having a special place in the communications and travel industry, requires several programmers at different levels to join existing development teams. Areas of expertise relevant include Z80 Assembler, PDP11 systems, UNIX and 'C'. PLZ, Viewdata, CP/M, comma and travel agency applications. Excellent benefits include special holiday discounts.

Consultant Tech. Author

N. H. Counties £Neg.

A large publications department of a very successful computer company is seeking an experienced technical author who will provide advice and assistance across a range of internal and external project teams. He/She will be capable of analysing and specifying documentation needs and styles for a wide range of purposes. Tact and self confidence essential.

IBM Series 1 Programmer

S.E. London £9-11K

The communications centre of an international Bank requires an additional programmer for the enhancement and support of the IBM Series 1 component of their multiple computer message switch system. Assembler level programming experience is essential. There will be the opportunity to gain experience on DEC PDP minis. Attractive bank benefits: low interest mortgage, free pension, free restaurant.

X.25 Development

Herts. £8-15K

Our client is engaged in the design and development of a very large packet switched network. The completed system will involve the installation of hundreds of computer nodes throughout the U.K. If you have from two to ten years experience in systems software or real time applications please apply. Comm. is desirable but not essential. Reloc. assistance.

Senior Prog./Analyst

Berks. £9-13K

It is an essential requirement for this position that candidates have up-to-date experience with a range of financial systems. You will be expected to work closely with the financial dept. of a successful engineering/manufacturing company in development of HP3000 based applications. COBOL is essential. BASIC would be useful. Reloc. assistance, non-contrib. pension.

Analyst Programmer

Herts. to £10,000

A very successful computer manufacturer has vacancies in their internal D.P. department for experienced programmers to work on a variety of applications - commercial, financial, manufacturing systems. Preference will be given to degree level candidates with previous Basic experience. A positive, analytical manner is required for working with several user departments. A clean driving licence is essential.

Sen. Design Engineer

Herts. to £13,000

The successful candidate will be expected to play a major role in the development of advanced digital data communications products. He/She will interface with marketing and be sufficiently experienced to negotiate cost effective and timely solutions to their needs. Strong leadership qualities an advantage. An electronics degree and previous design of micro-board real time systems essential.

Tandem Comms.

N. M'sex. £9-13K

This expanding, turnkey vendor of Tandem computer systems is seeking highly motivated software people to work on advanced applications using Tandem equipment. Experience in communications and screen based applications using COBOL is required. The company has its own in-house Tandem system providing training on this very popular equipment. Candidates must be presentable.

Programmers

British Nuclear Fuels Limited is a world leader in the provision of nuclear fuel services. The Company's computer resource has recently been re-organised to provide each of its sites with selected hardware and software to meet their specific technological and administrative needs.

We are currently developing systems to run on a range of hardware which includes PRIME, ICL 2904, ICL 2982. These computers are located at our four sites and at our Head Office in Risley, Cheshire. We are developing financial, commercial and personnel systems using on-line database techniques, COBOL and FORTRAN.

To aid our development we need to recruit male or female computer

professionals as Commercial Programmers. Applicants should have a minimum of 2/3 years DP experience in COBOL. Knowledge of on-line techniques and databases would be advantageous.

Salary within the range £8280-£12860, in addition to which there is a market rate allowance of up to £1500 a year, a Company productivity bonus scheme and flexible working hours.

These posts are based at our Risley, Cheshire, Headquarters. To apply, please write or telephone for an application form, quoting reference 0478 to Mr. M. Cordes, Staff Office, A121, British Nuclear Fuels Limited, FREEPOST Risley, Warrington, Cheshire WA3 1BR. Telephone: Warrington (0925) 35953 Ext. 2436P

BNFL

(2210)

LECTURER/CONSULTANT

c£9,000 + car

Protocol Operations Ltd, a leading training and education company in the UK, has a need for people aged 28 to 35 to join its lecturer/consultant team, providing a high standard of service to data processing throughout the UK, Europe, Middle East and Australia.

Experience is required of having proven knowledge in computer education, especially in the area of IBM DOS/VSE, POWER/VSE, VM, CICS, VSAM and Teleprocessing. If you believe you have the required background for this position, and possess a high level of self motivation and the ability to work without direct supervision send your complete cv, in confidence

to: Phil Cartmell,
Protocol Operations,
Protocol House,
26/28 Southampton St,
Reading,
Berks. RG1 2QL

2227



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HR

H. R. Associates Limited

57a Hill Avenue, Amersham, Bucks. HP6 5BX

Telephone: 02403 28383

Telex: 480 000 000 000 000

HR

PROGRAMMER/ ANALYST

to manage small Data Processing Department

Location: Near London Heathrow

Salary: Negotiable between £10,000 and £11,000

RPG 2 and MAAPICS background required

Our client is Kaynar UK, based near London Heathrow. They currently operate an IBM System 34 and now wish to recruit a programmer/analyst with a good RPG2 and a MAAPICS background to be responsible for implementing MAAPICS and also developing other systems as they may be required. The Data Processing Group is a small one and the successful candidate will play a valuable part in the development of the department. He/she will be expected to meet people at all levels within the organisation, to help educate users and to clearly understand their requirements. The position

reports directly to the Financial Controller, and is one of considerable responsibility. Kaynar UK are part of a very large American group supplying parts to the aircraft and aerospace industries. The position offers a career opportunity to someone who is either working in a large data processing department at the moment or in a senior position in a small one to manage a group that is very important in the future development of the company. The successful applicant will be given every support to enable the appointment to be successful, and will enjoy working within a friendly and well-balanced atmosphere.



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JVG Recruitment Ltd., Sentry House, Frimley Road, Camberley, Surrey.
Tel: Camberley (0276) 29213 (24-hour answering service). Telex: 858386.
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A MICRODOT COMPANY



(227)

PROGRAMMERS & ANALYST/PROGRAMMERS COBOL/BASIC £8,000-£11,000

Several outstanding opportunities exist within this rapidly expanding LON-DON-based international organisation with a £ multimillion turnover.

The data processing department houses up-to-the-minute IBM technology with a wide variety of modern periphery equipment. In order to meet growing demands our client is seeking to recruit both Programmers and Analyst/Programmers keen to progress their career in a fast moving, real-time environment.

If you can offer at least 18 months' COBOL or BASIC expertise and want to find out more about these exciting positions contact DP Selection Services quoting Ref W1201.

TWO DEVELOPMENT TEAMS WANTED £neg

The exciting news is that the New Year heralds the beginning of two major development projects at our client's IBM 4331 DOS/VSE site creating opportunities for DP personnel at all levels.

Obviously CICS/DLI COBOL Programmers and Analysts are premium candidates but applicants offering at least two-three years' experience in other environments will also be appointed. Good commercial applications knowledge in either financial and/or inventory reporting together with experience of DBMS or TP utilities will support your application. Based in London, a full range of company benefits are included with this golden opportunity to establish your career in 1983.

Ref W1202

These are just some of the career opportunities that we are currently assisting our clients to fill. We would be pleased to talk to you regarding these and many other vacancies that we are currently aware of. Telephone one of our consultants to discuss your particular requirement and how DP Selection can help you.



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7 Swallow Street, London W1R 7HD

"We look forward to hearing from you."

01-434 2042
(24 hour Ansaphone)

(2216)

ANALYST/PROGRAMMER HP 3000 to £13,000

C. London based company seek an experienced Analyst/Programmer to enhance their existing team. Applicants should have a solid D.P. background which must include two years + COBOL knowledge of HP 3000, particularly IMAGE database and sound systems and database design experience. In return the company offers a wide range of benefits and is committed to full training of employees where necessary.

PROGS & ANALYST/PROGS HP 3000 to £13,000

Rapidly expanding company based in the Northern Home Counties requires experienced computer personnel at a variety of levels. Programmers are required and should have around two years' COBOL experience preferably on HP equipment although other similar size machines may be considered. Analyst/Programmers should have three years' experience which must include some HP 3000 exposure. This is an excellent career opportunity to join a fast-growing company and work on a variety of applications.

ANALYST/PROGRAMMER BURROUGHS c £10,000

Software house based West of London seeks an Analyst/Programmer with two years' + BURROUGHS COBOL experience. A considerable amount of work is done on client sites and applicants must therefore be presentable in both appearance and attitude. Excellent working conditions with the prospect of a company car in the future are offered to the successful candidate.

PROGRAMMERS HP 3000 c £8,500

Programmers with around 18 months' HP 3000 experience, using any language, are required by C. London Installation. A strong emphasis is placed on training and successful applicants will be sent on the latest courses where necessary. The company also offers exposure to systems and movement to Analyst/Programmer role fairly quickly, making this an excellent career opportunity.

SENIOR PROGRAMMER HONEYWELL L66 £10,000

Major manufacturing concern is currently seeking to recruit a Senior Programmer to lead this successful company's D.P. programming team. A minimum of four years' HONEYWELL programming experience is required together with sound knowledge of IDS database systems. Perks include S/T loan, company discount on products and relocation expenses where necessary.

PROGRAMMER ICL COBOL £9,000

Small successful software house based in Middlesex requires Programmers with around three years' ICL COBOL experience. Knowledge of on-line systems is useful however not essential. Perks are varied and include five weeks' holiday, profit sharing scheme and subsidised world-wide travel.

ANALYST/PROGRAMMER ICL VME/B £9,000

Based in North Surrey this financial concern requires an Analyst/Programmer with a minimum of three years' experience. Applicants should be familiar with either DME/G2 or VME COBOL programming techniques together with a sound attitude for systems. Perks include a preferential mortgage and subsidised restaurant.

PROGRAMMER BASIC + RSTSE c £8,000

A software house specialising in DEC systems has a requirement for a BASIC + Programmer. Applicants should have 18 months' BASIC gained in any commercial environment. This is an ideal opportunity for programmers to move on to VAX equipment since the Client is installing several VAX machines.

PROGRAMMER/ANALYSTS RPG/GSD £10,000

Two medium-sized Software Houses have identified several requirements that have arisen due to recently won orders. Applicants should come from solid GSD backgrounds with a minimum of nine months' programming. The attraction with these posts is the diversity of the work; current projects range from manufacturing through to banking. Applicants will also become involved with the users and should therefore be good communicators and presentable. Both clients have in-house SYS 34s and 38s.

(227)

404 4821



Apex Computer Recruitment Ltd.

London Office: 59 Grafton Road, London WC1X 8TL. Tel: 01-404 4821.
Brussels Office: Rue Gotti de Gomard, 24, Uccle 1180 Brussels. Tel: 010 322 377 4192.

Senior Assistant Data Processing Manager Hong Kong £25,620p.a. + 25% gratuity

- Low tax area — maximum 15%
- Medical and dental benefits
- Free passages & holiday visits for children

Applications are invited for the above post in the Government Data Processing Agency in Hong Kong.

Applicants must have a degree from a Hong Kong or British university or equivalent; and 15 years' post-qualification experience in the computer field, 8 years of which should be at senior management level.

The successful candidate will be responsible for the management of the section which provides administrative support services, operational and technical support services, planning and quality assurance services and departmental services; training and career development of staff in the data processing field; ensuring that departmental computerisation programs are set up and pursued in accordance with policy.

- Generous annual leave
- Subsidised accommodation
- Children's education allowance

overseeing the development and implementation of computer applications, the installation and operation of departmental computer centre and dedicated computer equipment.

The appointment is for an initial period of 3 years with annual leave. Salary is HK\$22,200 per month (approx £25,620 p.a.).

For further details and application form, write to the Hong Kong Government Office, 6 Grafton Street, London W1X 3LB, quoting ref: APPT/DP/1/82. Closing date for return of application form: 10 February 1983.

*Based on exchange rate HK\$10.40=£1.00 (Subject to fluctuation)

(2228)

Hong Kong Government

VME/B TECHNICAL SUPPORT

c. £10,000

As the country's leading retailer of video, home computers and photographic equipment we ensure that our product range is the most up-to-date available. We view our DP set-up in the same way; we have a 4Mb ICL 2966 at Stevenage, with the programming team being based at Edgware. As well as normal batch and MAC work, we run TP systems for the Edgware and Stevenage sites.

We are now looking for a **SYSTEM PROGRAMMER** with at least two years experience programming under VME/B, to join the Technical Support Team. You will be maintaining and enhancing the systems software

Stevenage, Herts.

and be involved in the further development of our TP services and the enlargement of the communications network.

Good communication skills are particularly important as you will be advising and supporting the Operations and Programming Sections. You must, therefore, be able to assess technical problems easily and resolve them rapidly. Your sound technical knowledge will also enable you to produce and document any required software tools and utilities.

The competitive salary offered will be supported by substantial company benefits.

Dixons

Please telephone or write with full career details to Richard Corney, Technical Services Manager, Dixons Limited, Dixon House, 18-24 High Street, Edgware, Middlesex HA8 7BG; Telephone 01-952 2345 extension 3369.

(2246)

SOFTWARE PROFESSIONALS

LONDON £11,500-£15,000
including MORTGAGE SUBSIDY

SET UP IN THE EARLY SEVENTIES with a sophisticated computer system using a powerful mainframe and mini-computers and having reaped the benefits of substantial home-grown Real-time and Database Software, our Client is . .

PLANNING FOR THE MID-EIGHTIES when the options seem numerous and exciting. With multi-processor Mainframes and a large Micro based terminal network they are evolving a strategy which will allow reliable and economic exploitation of present and future technology.

IS YOUR CAREER IN SOFTWARE? Are you a Graduate with a minimum of three years' experience in the Systems Software area and grounded firmly in the realities of a business environment? Come and join this small team of dedicated computer software professionals who are engaged in a wide variety of work ranging from Software Design and Hardware Evaluation to Systems Efficiency.

As a member of a major Financial Group, our Client provides extremely generous fringe benefits including Subsidised Mortgage after one year, Non-Contributory Pension Scheme, free Life Assurance, free BUPA, Interest Free Season Ticket Loans and Equity Participation through Share Allocation.

Why not ring PETER BARSON on 01-839 6087 for further details.

BARSON & TAYLOR LTD

107 Jermyn Street, London SW1Y 6EE

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& TAYLOR

(223)

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to manage small Data Processing Department

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PROGRAMMER BASIC + RSTSE

c £8,000

A software house specialising in DEC systems has a requirement for a BASIC + Programmer. Applicants should have 18 months' BASIC gained in any commercial environment. This is an ideal opportunity for programmers to move on to VAX equipment since the Client is installing several VAX machines.

PROGRAMMER/ANALYSTS RPG/GSD

£10,000

Two medium-sized Software Houses have identified several requirements that have arisen due to recently won orders. Applicants should come from solid GSD backgrounds with a minimum of nine months' programming. The attraction with these posts is the diversity of the work; current projects range from manufacturing through to banking. Applicants will also become involved with the users and should therefore be good communicators and presentable. Both clients have in-house SYS 34s and 38s.

(2217)

404 4821

Apex

Apex Computer Recruitment Ltd.

London Office: 59 Gray's Inn Road, London WC1X 8TL. Tel: 01-404 4821.
Brussels Office: Rue Gohier de Goffard, 24, Uccle 1180 Brussels. Tel: 010 322 377 4193.

Senior Assistant Data Processing Manager Hong Kong

£25,620p.a. + 25% gratuity

- Low tax area — maximum 15%
- Medical and dental benefits
- Free passages & holiday visits for children

Applications are invited for the above post in the Government Data Processing Agency in Hong Kong. Applicants must have a degree from a Hong Kong or British university, or equivalent, and 15 years' post-qualification experience in the computer field, 8 years of which should be at senior management level.

The successful candidate will be responsible for the management of the section which provides administrative support services, operational and technical support services, planning and quality assurance services and departmental services; training and career development of staff in the data processing field; ensuring that departmental computerisation programmes are set up and pursued in accordance with policy.

• Generous annual leave
• Subsidised accommodation
• Children's education allowance
overseeing the development and implementation of computer applications, the installation and operation of departmental computer centre and dedicated computer equipment.

The appointment is for an initial period of 3 years with annual leave. Salary is HK\$22,200 per month (approx £23,620 p.a.). For further details and application form, write to the Hong Kong Government Office, 6 Grafton Street, London W1X 3LB, quoting ref: APPT/DP/1/82. Closing date for return of application form: 10 February 1983.

*Based on exchange rate HK\$10.40=£1.00 (Subject to fluctuation)

(2228)

Hong Kong Government

VME/B TECHNICAL SUPPORT

c. £10,000

As the country's leading retailer of video, home computers and photographic equipment we ensure that our product range is the most up-to-date available. We view our DP set-up in the same way; we have a 4Mb ICL2966 at Stevenage, with the programming teams being based at Edgware. As well as normal batch and MAC work, we run TP systems for the Edgware and Stevenage sites.

We are now looking for a **SYSTEM PROGRAMMER** with at least two years' experience programming under VME/B, to join the Technical Support Team. You will be maintaining and enhancing the systems software

Stevenage, Herts.

and be involved in the further development of our TP services and the enlargement of the communications network.

Good communication skills are particularly important as you will be advising and supporting the Operations and Programming Sections. You must, therefore, be able to assess technical problems easily and resolve them rapidly. Your sound technical knowledge will also enable you to produce and document any required software tools and utilities.

The competitive salary offered will be supported by substantial company benefits.

Please telephone or write with full career details to Richard Corney, Technical Services Manager, Dixons Limited, Dixons House, 18-24 High Street, Edgware, Middlesex HA8 7EO. Telephone 01-952 2345 extension 3369.

(2218)

SOFTWARE PROFESSIONALS

LONDON

£11,500-£15,000

including MORTGAGE SUBSIDY

SET UP IN THE EARLY SEVENTIES with a sophisticated computer system using a powerful mainframe and mini-computers and having reaped the benefits of substantial home-grown Real-time and Database Software, our Client is .

PLANNING FOR THE MID-EIGHTIES when the options seem numerous and exciting. With multi-processor Mainframes and a large Micro based terminal network they are evolving a strategy which will allow reliable and economic exploitation of present and future technology.

IS YOUR CAREER IN SOFTWARE? Are you a Graduate with a minimum of three years' experience in the Systems Software area and grounded firmly in the realities of a business environment? Come and join this small team of dedicated computer software professionals who are engaged in a wide variety of work ranging from Software Design and Hardware Evaluation to Systems Efficiency.

As a member of a major Financial Group, our Client provides extremely generous fringe benefits including Subsidised Mortgage after one year, Non-Contributory Pension Scheme, free Life Assurance, free BUPA, Interest Free Season Ticket Loans and Equity Participation through Share Allocation.

Why not ring PETER BARSON on 01-839 6087 for further details.

BARSON & TAYLOR LTD

107 Jermyn Street, London SW1Y 6EE

BARSON & TAYLOR

(2219)

Systems & Programming Opportunities

IBM 4331 DOS/VSE

Salary range US\$20-35,000 + benefits

Systems Analysts, Analyst Programmers and Programmers are required for a successful American organisation in the services industry, with its headquarters in Virginia.

The Company uses a wide range of computer hardware for various applications although the current requirements are related to the IBM 4331 based systems. A minimum of three years' DP experience is essential and a COBOL programming background is required for all positions. The main requirement is for Analyst/Programmers although opportunities also exist for Analysts and Programmers. RPG and accounting systems experience would be useful but is not essential.

These are permanent positions although contract appointments will also be considered. Realistic U.S. salaries will be in the \$20-35,000 range plus fringe benefits including medical, travel, life assurance, etc.

Please contact Ian Murray West

WEST GERMANY

Systems Programmers c£700 p.w.

IBM 3033 MVS/IMS

Five Systems Programmers are required ideally on a contract basis for a major project in Central Germany to cover tuning, systems generation, enhancement, etc. Knowledge of PL1 or COBOL is also preferable. Although some German ability would be useful this is not essential. Six-month contracts with extension options.

Please contact Roger Allington

SAUDI ARABIA

Sales

Basic c£18,000 tax free, on quota earnings, c£30,000 plus married accommodation, car allowance, home flights and medical cover

Our client, the exclusive Saudi Arabia representative for Data General, Tektronix, Calcomp and Printronix require two further salesmen to promote in particular the DG range of hardware and associate software.

Candidates must have a proven sales track record.

Please contact Jenny Dalrymple-Hay or Ian Murray West

LONDON/HERTS BORDER

Systems Designers to £12,500 + Benefits

Senior Programmers to £11,500 + Benefits

Our client, a major financial institution, has a requirement for several experienced DP personnel for new development projects. The installation is IBM 4341 under OS and with a further IBM 4341 planned during 1983.

Systems Designers must have over three years' experience in analysis and design in an IBM commercial environment.

Senior Programmers must have over three years' OS/PL1. Ideally using CICS and/or Assembler.

An above average employment package, including immediate mortgage subsidy, free pension and life assurance as well as other attractive benefits will be offered.

Please contact Colin Maslen

LONDON AREA

Sales/Support Manager

Salary £10-£12,000 basic + Car & Commission

Set-up situation. Successful small company requires an enthusiastic self-starter to set-up their LONDON operation.

The Company market is fully integrated hardware/software system for the Electrical Engineering Industry. It is based on DEC 11/23 with graphics digitizers and a full range of applications software.

The successful applicant must have commercial experience, ideally handling financial applications such as nominal ledger, etc., be capable of handling client negotiations, assisting and training first-time users and sorting out basic DP implementation problems. Ideal would be some experience of DEC hardware and DIBOL. An academic or professional qualification would be advantageous.

Please telephone 01-483 2847 (Mon-Fri) or at weekends Roger Allington on Little Gaddenden (044284).

DALROTH & PARTNERS LTD., 4 HALF MOON STREET, LONDON W1

Duncan Bransom Ltd. will be continuing their expansion throughout 1983 and are now looking for

2 Systems Analysts c.£15,000
2 Analyst Programmers c.£12,000

The company, formed in 1974, has dedicated itself to the production of applications software of the highest quality, mainly for IBM mainframes. To cope with the steady demand for its services and the growth planned for 1983 there are now vacancies for two systems analysts and two analyst programmers.

Successful applicants will have had two or three years working in one or other of these capacities. Experience on IBM machines using CICS, DL1, COBOL or ADABAS would be an advantage but this is not essential.

If you are looking to join a small dynamic organisation where, through your ability and hard work, you seek to progress to the top, this could be the opportunity for you.

A pleasant stable working environment is maintained where people can develop their professional skills whilst earning good money. Staff turnover is low - the company has only lost four people in nine years.

You should be prepared to work either in our offices in Potters Bar or on the premises of our clients, most of whom are located in the London area.

There are the usual fringe benefits including a profit sharing scheme. Please contact Roger Griffiths on 01-502 0325 or Martin Hole on 0707 44681 to discuss a possible appointment, or write sending brief details of your career to date. Under no circumstances will your present employer be approached without first obtaining your permission in writing.

Duncan Bransom Limited

A company you can grow with

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2114

ICL Analysts Programmers & Team Leaders required for over 50 projects commencing now until April

Do you have experience of any of the following?
IDMS TP CODASYL VME/B
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If so ring Caroline

IBM PL1 IMS DB/DC (PROG)
IBM COBOL (PROGS)
VAX COBOL (PROGS)
VAX COBOL (DATATRIEVE IS POSS - SEN PROG)
ICL 1900 COBOL G3 (SEN PROG)
IBM PL1 IMS DB (ANALYSTS)
IBM PL1 IMS DB (PROGS)
CORAL or ALGOL or PASCAL (ALL ROUNDERS)

"C" Experience for R/T COMMS PROJECT
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(2271)

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The Quadrant
Sutton, Surrey GU7 5AA
(2271)

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Psion is a substantial and rapidly growing microcomputer applications and software house.
We require creative, skilled and able programmers and analysts. Applicants should have experience of assembly language and machine code on one or more microprocessors. This is an exciting opportunity to work with a dedicated team in Central London in the latest growing area of computers.
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How does six months hard labour twice a year grab you?

Span is a specialist contract agency with a reputation for finding contractors good solid 6 months contracts. We expect our contractors to work hard and consequently to be well rewarded for their endeavours. We have built up an excellent file of professional programmers and analysts, but we always need more, so thumb through the requirements and give us a call or complete the coupon as soon as possible and send it to us so we may act on your behalf.

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★ System 34 and 38 RPG people with Banking or commercial experience for a number of assignments in London and the Home Counties are required immediately.

★ 4300 experienced people are required with a variety of software expertise from DL1 to IMS to ICCF. We need application programmers and technical support staff. All areas.

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★ Systems Programmers with MVS and IMS experience are urgently required for very long term assignments in Central London, ring Alastair McIntosh for an immediate interview.

★ American opportunities also exist for CICS COBOL or PL/1 people in permanent or contract positions, ring Janet Chilvers for more information.

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Anyone interested in becoming a contractor should ring Phil Hart for more information.

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London assignments for ICL 2900 VME people include IDMS and TPMS specialists in addition to straightforward COBOL applications people. Also looking for Project Managers and Senior Analysts.

2904 and ME29 Programmers are required for London and Surrey. EXEC, TME and MTS are sought after.

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DEC and VAX contractors are always in demand with Macro 11 or Coral, Mumps or Basic +. 11/780 VMS people are at a premium. We have these type of requirements all over London and the South.

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In London, Essex and Herts we need Univac 1100 people with COBOL ± Assembler with MAPPER, DMS 1100 and TIP.

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In the UK, USA and Australia we need Tandem expertise at all levels.

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Please send me more details on Span's service
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APPLICATIONS & SOFTWARE DEVELOPMENT

UK Network - Electronic Point-of-Sale - Distributed Processing

In line with continued business growth and long term D.P. development strategy, MFI - Europe's fastest growing furniture retailer - is currently seeking additional DEC software/applications specialists for their UK headquarters, at present situated in Wembley, but transferring to Edgware during 1984.

Programmer/Analysts

£7K-£12K plus car

Substantial reorganisation and expansion within the applications arena has provided opportunities 'across the board' for Programmer/Analysts with a minimum of one year's FORTRAN and/or BASIC experience gained in a commercial environment.

Positions are available at all levels of technical expertise encompassing broadly based and diverse commercial application areas, in an installation making extensive use of database and on-line programming techniques.

These key positions, as one would expect, offer attractive remuneration packages to include Company cars at the more senior levels, plus share participation scheme, BUPA, free life assurance and discount on Company products. Relocation assistance will also be provided where deemed necessary.

For immediate consideration contact **Adrian Hardy** on 01-935 0671 (24 hour answering service) or Ashford, Middlesex (07842) 46026 evenings and weekends.

Software Programmer

£12K-£16K plus car

The installation at present houses an impressive array of DEC computers running under both RSX11M+ and RSTS/E incorporating DATARETIVE and DECNET; all retail system software being written in MACRO 11.

Making a direct impact on all software development/maintenance from the outset, the successful applicant should possess a thorough understanding of the above language, together with an in-depth knowledge of RSX11M+ or M.

MFI

WEMBLEY/
EDGWARE

Technical, Sales & Management Appointments

TCR

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061-833 0427

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RECRUITMENT CONSULTANCY

LONDON £12-£25,000 pa BIRMINGHAM

T.C.R. are seeking to expand their range of Advertising and Recruitment services to the Data Processing Sector by the addition of a number of Consultants.

The people we are looking for will be able to demonstrate a good track record in a similar role or alternatively have had experience at a senior level within the computer services or systems and programming environment. Probably aged between 25 and 35 the successful candidates will have a good level of education and possess the inter-personnel skills necessary for these challenging and rewarding positions. We would be particularly interested in talking to Midlands-based people capable of taking on MANAGERIAL responsibilities in the near future.

A very high level of income is envisaged for those with the ambition and determination to succeed, the remuneration package consisting of basic salary, commission, guarantee, bonus, health care plan and company car where appropriate.

Phone or write to **ROGER WILKINS** at:

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Targa Computer Recruitment
6 Liverpool Street London EC2M 7NH Telephone 01-283 9941 Telex 894958

Job Spot

Link-Miles

PROGRAMMERS
& NEGOTIABLE

Link-Miles is an independent division of the international Singer Company designing and manufacturing advanced flight simulators for commercial airlines and military users throughout the world. Expansion has created vacancies for Programmers with at least two years' experience gained in a scientific environment. Projects will involve utilizing high and low level languages on complex systems such as real time executive software to control multi-processing mini-computers and programming alpha-numeric and graphical colour CRT display systems for flight instructor stations. Link-Miles offer excellent conditions which include highly competitive salaries, generous relocation package, five weeks' holiday, pension scheme, etc.

LOCATION: SUSSEX

JA811/1

NCR

SYSTEMS AUDITOR

2 attractive package

NCR - One of the world's largest computer companies seeks a Systems Auditor to join the European Region Corporate Audit Group based in London. As a senior member of the team, the auditor will undertake analysis, audits and developments of BDP systems plus occasional related operational and financial functions. Applicants will ideally have a proven track record in computer audit although training will be given to those analysts with a comprehensive understanding of BDP and a knowledge of business practices, procedures and controls. In addition to an attractive salary and benefits package and the opportunity for regular world-wide travel.

LOCATION: LONDON

JA811/2

REAL TIME
DEVELOPMENTS LTD

PROGRAMMERS
SOFTWARE ENGINEERS
CONSULTANTS

TO £14,000

Real Time Developments are a successful company with a commitment to providing quality software services. Increased business has created a requirement for a number of highly motivated and adaptable Programmers, Software Engineers and Consultants with a background in any mini/micro environment particularly PDP-11 or Z80. Candidates should be educated to degree level and will have gained their experience using high level and Assembler languages. A knowledge of Real Time Software, Data Communications or Industrial Automation applications will be advantageous. In addition to an excellent salary, RTD offer a range of benefits, including relocation, normally associated with a thriving organisation.

LOCATION: HAMPSHIRE

JA811/3

dp

CONSULTANTS
TO £17,000 + CAR

Our client is one of Europe's leading systems consultancies with a commitment to providing quality software services. Increased business has created a requirement for Consultants to work on a number of projects within a complete range of military applications and software. The successful candidates will have proven ability in any of the following areas:

- ★ DATABASE TECHNOLOGY
 - ★ REAL TIME SYSTEMS
 - ★ MINI/MICRO HARDWARE (preferably DEC)
 - ★ ASSEMBLERS, FORTRAN, COBOL, PASCAL
- In return our client offers excellent salaries, in a range according to experience and a comprehensive benefits package.

FK810/4

CTL

SYSTEMS ENGINEERS
(HAMPSHIRE)
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Since the company's formation in 1966, Computer Technology Limited have seen a substantial growth and established market leadership in the field of transaction oriented multi-computers. This success has created a requirement for an adaptable and self-motivated Systems Engineer who will be responsible for preventive and corrective maintenance of a CTL system sited on customer premises. Applicants should have a minimum of three years' experience in a mini or micro environment and ideally have a relevant qualification or equivalent forces training in electronic engineering. In addition to an excellent salary and benefits package, CTL will provide a company car.

LOCATION: CENTRAL LONDON

JA811/5

G

PROGRAMMERS
TO £10,000

The Telecommunications Computer Centre, an established on-line service bureau and software house, have created a vacancy for a Systems Programmer to join the team at the forefront of a substantial development project. The successful candidate will be responsible for the development of a new system which should be COBOL, to be used in the development of major commercial systems. A thorough knowledge of structured programming techniques is required, gained ideally in a service bureau or business environment. Candidates should be highly adaptable and self-motivated with the ability to meet deadlines. In return the Company offer good salaries and working conditions according to experience.

LOCATION: SLUGH

JA811/6

Action..

ring or send the coupon to
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DALROTH

Systems Expertise Sales Potential

Basic c£10,500 + car + commission

(on quota earnings of £16,000)
(Existing staff have exceeded this figure)

SyncoSort Technology Limited, with their headquarters in Berkshire, market and support their own products in the UK and Europe. The Company have an established and satisfied customer base for their OS, DOS and CMS software products and currently have two vacancies:

For one of the positions the successful applicant will have a background in any of the following: Systems Programming/Systems Engineering, Systems Support/Operations Support, Assembler Programming and ideally experience in OS, DOS and CM/CMS.

For the other position a sales background is essential (this need not have been in DP), plus a minimum of 1 1/2 years in one of the above functions in an IBM installation.

The Company is willing to consider a negotiable package to suit the right individual, and will of course offer full training in their products, both in Europe and the USA.

For further information please write to Dalroth and Partners, 4 Half Moon Street, London: W1Y 7RA, quoting ref. 9948, or telephone Jenny Dalrymple-Hay, daytime 01-483 2947; evenings Beaconsfield (04946) 4678; or Graham Cottingham, daytime Reading (0734) 478335, evenings (0734) 474129.

DALROTH & PARTNERS LTD 4 HALF MOON STREET LONDON W1

Atari Customer Support

We need a micro enthusiast, preferably an Atari owner, to talk to the users of the Atari 800 and Atari 800 Home Computers and answer their queries and questions.

Due to our rapid growth we have been able to promote the senior person in this group and we now need to replace him.

To apply you must have micro experience, preferably Atari specific and be fully competent in BASIC. If you have experience of ASSEMBLER this would be a plus point. You must be able to differentiate between hardware/peripheral/software/user problems and clearly communicate the answers.

Your personality must be energetic and outgoing with a pleasant telephone manner. As well as dealing with customers on the phone you will attend exhibitions and user group meetings. You will also be responsible for training other Atari staff and maintaining reference sources.

Based in Slough, some travel is involved and there is a full driving licence is required. Preferred age range is 23-35 as it is unlikely that anyone under 23 years of age will have sufficient experience.

We offer a very competitive salary supported by a generous benefits package. If you can bring us a flexible and analytical approach, prospects for career development could hardly be better. We're succeeding in a fast-moving field and we're looking for an ambitious man or woman to succeed with us. Please write today with full personal and career details to:

David Forsyth, Consultant, Atari International (UK) Inc., Atari House, Railway Terrace, Slough, Berkshire.

ATARI

HP3000
CONTRACT PROGRAMMERS X 6

URGENT

KPG

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(SOLE AGENTS)
(Emp Agt)

Computer Weekly SOFTWARE EDITOR

Salary up to £10,400 plus £300 reading allowance

A software editor is needed to join a team of 15 Journalists on Computer Weekly.

The ideal person would have proven journalistic skills as well as experience in the software field. But lack of journalistic experience should not inhibit anyone with a good software background and the energy and flair to hold down a senior job on a large weekly.

The successful candidate will be responsible for all software coverage on the journal, including a weekly software page.

Computer Weekly circulates 100,000 copies, is based at Sutton, Surrey, and is a major title within IPC Business Press. Itself the world's largest publisher of trade and technical journals. The computer publishing market is showing rapid growth. Computer Weekly launched two ancillary publications and a number of exhibitions and conferences in the past year, and career opportunities reflect that.

Write to the editor setting out your full CV, your job content over the past few years, and your reasons for believing you are the right person for this position. Address your letter to: DAVID CRAVER, THE EDITOR, COMPUTER WEEKLY, QUADRANT HOUSE, THE QUADRANT, SUTTON, SURREY SM2 6AS, and mark the envelope confidential. All terms and conditions are in accordance with the IPC/NUJ Agreement.

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An excellent opportunity for a person capable of leading staff and standing in for his or her Project Leader when required. Experience in the design and implementation of CICS-COBOL systems for financial applications will be required and our clients offer in return an excellent opportunity for personal development and a good benefits package. Ref: R3673

PROGRAMMER

LONDON c£9,000
An immediate career opportunity has occurred for a Programmer with solid BASIC/RTSE experience but with working knowledge of COBOL in their background. The job will involve a growing Analysts content, some travel and diversification of systems. A valuable BENEFITS package is offered in addition to the appropriate salary. Ref: C4188

ANALYST

CITY c£11,000 + MORTGAGE
Our clients are a major member of the banking sector. They are looking for a Systems Analyst who has had exposure to 'wholesale' banking applications such as Eurobonds, Dealing, FX etc. This could be an opportunity for a person who has gained real analysis experience as an Analyst Programmer. The usual range of banking benefits apply. Ref: R4184

PROGRAMMERS AND ANALYST/PROGRAMMERS

LONDON/HOME COUNTIES £NEG
We are currently seeking Programmers and Analyst/Programmers at all levels for several major companies situated in London and the Home Counties. Our clients need COBOL people, with ICL experience and at certain levels proven analytical skills or supervisory backgrounds. Good negotiable salaries and comprehensive benefits packages including, where necessary, relocation are available for all positions. Ref: C3848

ANALYST/PROGRAMMERS

CITY to £11,000
Continued commitment to development of on-line systems has created the need for ambitious analyst/programmers at our clients, a major city-based insurance company. A solid IBM CICS-COBOL background is required and in return a substantial package including a generous salary is offered. There is ample scope for personal advancement in this expanding department. Ref: R4187

ANALYST/PROGRAMMERS

CITY to £12,000
A major Systems House, currently developing Banking and insurance systems, utilising the latest DEC VAX and PDP equipment is seeking several proven Analyst/Programmers. If your background has involved DEC systems and good Basic or Cobol experience, allied to formal analysis skills, an exciting career opportunity is immediately available to you. Ref: C4085

TCR

Targa Computer Recruitment
6 Liverpool Street London EC2M 7NH Telephone 01-283 9941 Telex 894958

MANAGEMENT & EXECUTIVE SELECTION

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STRATEGIC MARKETING

PRODUCT MANAGER Interconnections & Terminals c£16k plus car

- IBM literate
- Knowledge of desk top micros
- Marketing Product Specification Experience

The Company

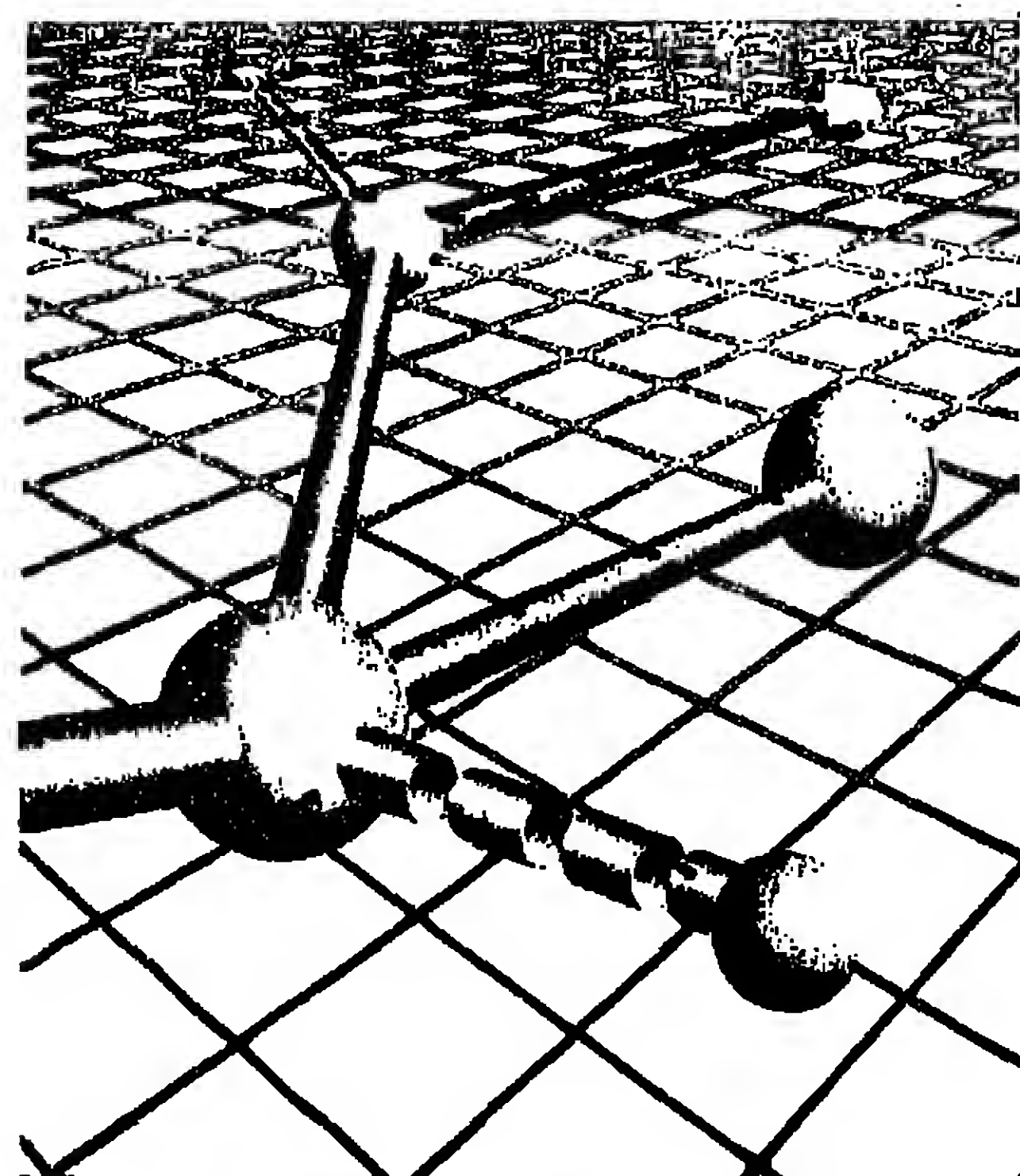
We have been retained by a Major British Telecommunications Company to identify and select two Product Marketing Managers for a newly created division. The Division's specific function is to operationally and functionally co-ordinate the design, development and marketing of integrated office systems.

The Division is ideally positioned to gain from the company's substantial and continuing investment in the research and development of local area networks, terminals and applications services.

Reporting to the Marketing and Manager, these roles are seen as vital to the success and growth of the Division.

Call Kathy Sinclair or Karen Whelan, immediately for an interview, on 01-637 9611

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611



PRODUCT MANAGER Networks & Applications c£16k plus car

- Experience Conceptual Knowledge of Networks within Integrated Office Systems
- Competitive Product Analysis
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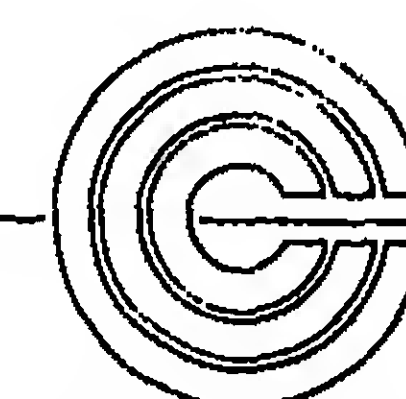
Preferred Experience

Candidates, male or female, should be between the ages of 28 and 38 and have an education to degree level in business management or a technical field, a strong sales and product marketing background gained within a computer/peripherals / electronics company, the ability to think conceptually and to communicate effectively in both the spoken and written word.

Personal drive and a results orientation are seen as key qualities to ensure success and rapid career progression.

These positions are based in North London and company benefits are as one would expect from a major organisation.

MANAGEMENT & EXECUTIVE SELECTION



Computer Career Consultants

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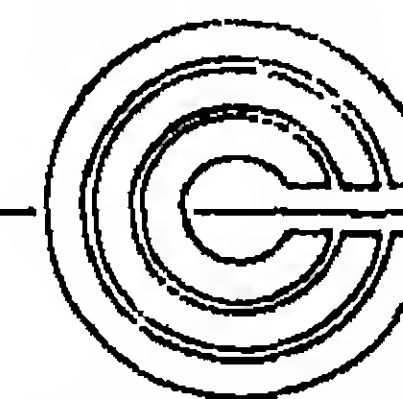
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(2214)

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to c£14K

Initially the responsibility will be to establish departmental systems design and programming standards, control the maintenance of existing systems and liaise, direct and monitor the development work presently being carried out by software houses. As required during 1983 suitably qualified development staff are to be recruited to assist in future project development across a broad spectrum of business activities. The SDM will take responsibility for the building of the team as well as managing and controlling the development plan in liaison with the Business Analysts. Once again the successful candidate must be able to demonstrate previous project leading experience, plus a sound background in analysis, design and programming ideally in an IBM on-line database environment.

At initial interview for both these positions candidates will be expected to demonstrate the ability to liaise effectively with a wide range of DP and non-DP personnel. For further information please contact our Advising Consultant Steve Stark on 01-935 0671 during working hours or alternatively submit a detailed cv to him at the London office.

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CITY OF WAKEFIELD METROPOLITAN DISTRICT COUNCIL FINANCE DEPARTMENT

SENIOR PROGRAMMERS

SO1 £8,658-£9,231

PROGRAMMERS AP4 £8,873-£4,645

The above additional staff are required to enhance the range of services provided to all of the Council's departments. The Authority utilises C.M.C. Sequela and Realis equipment and the next phase of development will involve a further extension of the existing large terminal network. Extensive programming experience is required for the senior posts, together with the ability to make major contributions towards system design and work directly without supervision with user departments. Requirements for the programmer posts are at least two years sound programming experience and the ability to work directly with users within a defined system outline. C.M.C. experience is desirable but not essential. Further information can be obtained from Mr Twichie, Tel Wakefield 57011. Ext 225. Requests for application forms (accompanied by a s.a.s.) should be addressed to The Chief Executive, (Personnel Section), Town Hall, Wakefield, to be returned by 7.2.1983. (12278)

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COMPUTERISATION

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(2242)

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(2211)

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(2218)

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(2241)

Most recruitment agencies forecast a rise in demand for contract workers . . . Chris Thornton reports

Skilled programmers may find 1983 is year of the freelance

THE bad news for freelance programmers is that 19% of data processing managers have stated that their demand for contract staff will take a turn for the worse in 1983. Better news is that 15% of data processing managers have said their demand for contract staff will increase over the year.

Even better, most recruitment agencies have forecast that 1983 ought to be a good year.

The contract sector of the market is one piece of the job action where action is an appropriate word. Even among the doom and gloom of slumps and depressions, freelancers with in-demand skills need never be out of work unless they want to be.

"People with specialist skills and especially those with experience on the up and coming manufacturers' machines like Wang, Hewlett-Packard and DEC should be in demand," said Shubrook's Eric Oldham.

And Justin Broadbent, of Computech, concurred: "Prospects for this year are good," he said. "Companies seem to be increasing their budgets for development and software. Just from conversations I have had with project leaders and data processing managers it seems that projects that have been waiting for the green light over the last year to 18 months are all set to go ahead in 1983."

You will always find one recruiter who disagrees, though, and Peter Clark, of VNG, which has offices in Gerrards Cross in Buckinghamshire, and in Manchester, thinks the market is fairly static at the moment. But his company is growing rapidly.

Last January it had 66 contract people working and now it has 127. Furthermore, VNG is about to open a Midlands office, so it's nice to see someone making something of a static market.

Clark's other views are shared by most agencies, though. His assertion that there will be a demand for micro people and people with specific skills such as CICS teleprocessing, and database is shared by most recruiters.

Computech's Justin Broadbent adds that Honeywell skills are in demand at the moment, and he personally knows of one company which is constantly buying micros to evaluate them and therefore needs a constant supply of people. So if you've got micro skills, get down to Computech.

Broadbent also says that prospects for UK systems programmers who want to work abroad are very good at the moment, particularly in Holland and the US, where English programmers have always been highly regarded. According to a recent report the demand for contractors will be lowest in bureaux and the process industry and highest in education and research.

"Just from talking to project leaders and data processing managers," said

Systems Support Services' David Butcher at the time, "it seems that projects they've been sitting on for months will be put into action in 1983."

"You've got to be bullish," commented Abraxas' Richard Merrigan. "The market may be shrinking, but if you've got good people you'll be OK."

Last year was the best yet for his company and it saw Abraxas increasing its overseas business and investing money abroad, particularly in Belgium and in the Middle East.

System Support Services' Butcher was quite confident that 1983 was going to be a good year at all skill levels.

"The only thing that may put employers off is the fact that contractors' rates may escalate. But I don't think that will happen and I believe 1983 will be a bumper year."

Abraxas' Merrigan doesn't share Butcher's optimism about the market in general. "The commercial market is shrinking," he says, "and skills in that field are not so much in demand as they were."

One of the few areas that continues to expand, whether you like it or not, is Ministry of Defence work. Large organisations in that field, like Marconi and Ferranti, are running down their numbers of full-time

specialist people. Alan Morton, of Guardian Staff Services in Manchester, says that "1983 is going to be an exceptional year."

In the North-west and North-east, the traditional reason for increases in demand for contract staff is prevalent: companies shelve

projects when there is a slump, then need contract people quickly when the projects pick up again. So the market is a bit different in the North, and Morton spotlighted one difference: "These days getting people in is the right priority," he said. "They are not quite so

specific about skills. If they can't find someone with exactly the right qualifications they are willing to take someone else."

One of the nice things about being freelance, of course, is that you can work whatever the fancy takes you. Holland and the US

have already been mentioned as likely places for British programmers and in the US itself the "Wen" boom which is an acronym for "Wages and Employment" is booming. Agencies there, says Morton, are in short supply.

So if you're good, meeting people, coming easily and getting on well with people, don't mind being the security of a regular job with pension scheme, paid holidays, sick pay and like travelling then it could be the year of the freelance.



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(2243)

SAUDI ARABIA FIELD ENGINEERING MANAGER

Rola Trading Corporation are the Saudi Arabian distributors for Data General and other major American principals. This expanding organisation with a satisfied customer base and maintenance contracts worth £1 million requires an experienced Field Engineering Manager for the computer division. Major benefits of the employment package are:

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Only experienced candidates should apply with c.v. to Computer Weekly Box 1241. Interviews expected mid February.

(2286)

MID-GLAMORGAN COUNTY COUNCIL COUNTY TREASURER'S DEPARTMENT

SYSTEMS ANALYST

£8,658 - £10,071

The Authority operates an ICL 2978 computer under the VME/B operating system and a vacancy has arisen for a Systems Analyst within a project team concerned with the development of systems for District Councils.

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(2288)

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Responsibilities will include customer liaison, sales development and control of computer sales staff.

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(2163)

GMC

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£9,072 - £10,071 p.a.

The Computer Systems Development Unit provides a service to meet the administrative needs of the Council's departments, the Greater Manchester Police, Greater Manchester Fire Service, Greater Manchester Probation and After-Care Service and Manchester International Airport. An extensive central and remote computing network, based on dual IBM 4341s, IBM 8100 and Philips P7000 distributed processors, is being developed.

Applicants should be experienced analyst/programmers or experienced programmers wishing to move to a senior analyst/programmer role. The ability to direct the work of junior staff, COBOL experience and a number of years on IBM equipment will be required. A degree or equivalent qualification will be an advantage.

Application forms and further details available from the County Treasurer, County Hall, 100 Portland Street, Manchester, M2 6PU. Closing date: 28 January 1983.

(2289)

PROGRAMMERS LONDON IBM COBOL to £10,000 + MORTGAGE

CICS TRAINING! We have been retained by this impressive international company in Central London to recruit a team of programmers. These positions are due to expansion and the embarkation of NEW DEVELOPMENT PROJECTS. The company retains IBM 4341 hardware using COBOL, CICS and DL/I. Applicants must have a minimum of 18 months COBOL. Perks include Subsidised Mortgage, Flexi hours, Salary reviews within 3 months, Pension and Life Assurance Schemes.

ANALYST/PROGRAMMER WEST END VAX BASIC £10,000 + BONUS

This company is a market leader in its field and has engaged our services to recruit an experienced VAX Analyst/Programmer, who must be prepared to become involved in the programming aspect of things, but must also display good analytical skills. Successful applicants should be able to adapt to new languages quickly. Candidates with a DEC background will be looked upon favourably, but MUST have VAX knowledge. Benefits include annual bonus, season ticket loan and pension scheme.

SYSTEMS PROGRAMMERS LONDON IBM ASSEMBLER to £11,000

SYSTEMS TRAINING. This prestigious international company seek to recruit systems programmers. This is an excellent opportunity for applicants with either 2 years applications ASSEMBLER or 6 months systems programming experience. The company offers an excellent training scheme which includes Systems, CICS and DL/I. They retain IBM 4341 and 3033 mainframes using both DOS and MVS. Make a career move to this progressive company - Ring now for further details.

ANALYST/PROGRAMMERS LONDON HEWLETT PACKARD £12,000

An excellent opportunity exists within this progressive insurance company for an experienced Analyst/Programmer with an excess of two years experience of Hewlett Packard hardware. Applicants should have a knowledge of IMAGE & COBOL, systems design and implementation and some database design. Benefits within this installation are first class and include Flexitime, L.V's, Free Life Assurance, Season Ticket Loan, BUPA. Employee training is of prime importance to this company and many facilities are offered.

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Telephone: 01-439 7871 Telex: 25851

London Computing Services Association

Sales Support Administrator c £10,000

Systems Resources (Midlands) Ltd, a leading IBM orientated Software House based in Coventry, requires an additional person to assist in the Sales area.

Applicants should be energetic, alert and self-motivated and be able to demonstrate an appreciation of the range of hardware and software products marketed by IBM. This experience will have been gained in the D.P. services sector or as a senior programmer or analyst in a commercial D.P. installation.

The successful applicant will be an integral part of the sales team providing back-up to the sales effort.

The role is seen as one which could develop into a sales position if the applicant showed the right qualities.

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Enquiries in writing or by telephone (0203 28301) to Tony Coombes at the address below.

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Our client, a unique and prestigious information research and publishing organisation with an outstanding record of growth and achievement, is embarked on a significant programme of new computer systems developments utilising on-line and database methodologies.

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Designers of the world's leading ATMs



INTER-COM Personnel Limited

JUNIOR SYSTEMS PROGRAMMERS CENTRAL TO 13,000

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Fast expanding computer services organisation require Programmers or Analyst Programmers with 18 months + exp. using BASIC +, FORTRAN or COBOL to join busy informal development team. Excellent opportunity for enthusiastic and conscientious persons to progress.

ANALYST PROGRAMMERS CENTRAL TO £11,500

This UK market leader requires IBM Cobol Programmers with experience of analysis. Applicants should have first class knowledge of DL/I, plus some exposure to T.P. Monitor to join development team embarking on a major expansion program. Call now for more details.

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TRAIN ON CICS and DL/I, an immediate career opportunity has arisen for a Programmer with solid PL1 or COBOL experience. Our client, a large manufacturing company, has IBM 4341 hardware and makes extensive use of CICS and DL/I, any existing knowledge of which would be thoroughly rewarded.

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CALL NOW. 01-735 5171

CITY AND HACKNEY HEALTH AUTHORITY

UNIQUE OPPORTUNITY IN HEALTH SERVICE COMPUTING PROGRAMMER

We are seeking a Programmer with a relevant degree to work in conjunction with the existing Computer Unit team on an expanding development programme. The work will be mainly in FORTRAN on Norsk Data ND-100 minicomputer system. The computer has about 40 terminals on-line and offers a general computing service within the Health Authority covering a wide variety of administrative, medical, scientific and laboratory applications. The Unit, which is part of the Department of Medical Electronics, is also responsible for training development work on various other minicomputers in FORTRAN, BASIC and PASCAL.

Based in St Bartholomew's Hospital, London EC1, the Unit had only a small staff and the successful applicant will be expected to undertake a range of responsibilities for the maintenance and running of existing systems as well as new development work.

She must be experienced in FORTRAN and familiar with use of database management systems. A knowledge of microcomputers would be an advantage.

Salary: £5,587-£7,577 p.a. including London Weighting (increased pending).

Job description and application form available from the Personnel Department on 01-400 8505 ext 2271, closing 22/1/83.

(2290)

*Our technology keeps us ahead
- but our people guarantee our success*

Programmer

Established in the U.K. for some 15 years, Sony has an enviable reputation in the audio/visual market. Our success is not only due to the advanced technology and high standards of our products - it's also our people that guarantee this success by reflecting that same high standard throughout all our operations.

Our continuing expansion in the U.K. means that we now wish to recruit a Programmer for our head office in Sunbury-On-Thames.

Ideally, you should be aged 25-30 and already have had at least three years general programming experience. You will also have used several different languages, including Fortran, and have knowledge of PDP11 running under RSX11, or VAX using VMS.

Career prospects with Sony are excellent. As well as offering a first class salary, our benefits include a lunch allowance, 23 days holiday, company pension and BUPA schemes, etc.

If you would like to join the Sony team and feel you have the necessary qualifications, please write to me, Rosemary Browne, at Sony UK Ltd., Pyrene House, Sunbury-On-Thames, Middlesex TW16 7AT.

Or alternatively ring me on Sunbury-On-Thames 81211, ext. 223, to obtain an application form.

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Field Engineering Specialist

Computer Systems c. £15,000

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Aged 30-35, and probably qualified to degree standard, you should have had substantial second-line engineering support experience, and be able to demonstrate a high level of technical ability in main-frame or mini computer technology. Success in customer relations is also of paramount importance.

A benefits package associated with a large international organisation is applicable and will include assistance with relocation, if appropriate.

Please telephone for an application form, or write giving full career details and present earnings, to:

Stephen Smith, Personnel Officer, Crosfield Electronics Limited,
756 Holloway Road, London N19 3JG.
Tel: 01-272 7766, ext. 3266.

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Salary £11,205 to £13,308 p.a. inc. (Ref. F68)

We are seeking an auditor with appropriate qualifications, and preferably with previous experience of computer audit, who can make a positive contribution to the development of systems and the use of data retrieval techniques.

The person appointed, who will be located within the Internal Audit Division comprising twenty staff, will be responsible for the audit of the computer installation, computer systems and the development of the computer audit function. The Council's systems use ICL 2900 computers with an extensive terminal network. Micro computers are also in use.

The Council is committed to an ambitious computer development programme involving the introduction of data based systems which include Financial Information (LAFIS) and Housing Management (HMIS).

Benefits include: Casual User Car Allowance, 36 hour week, flexitime.

For further information, or to arrange an informal visit, contact Mr B. Coker, Assistant Director of Finance (Audit) on 01-274 7722 Extension 2218.

Application forms are obtainable from the Personnel Officer, Director of Finance, London Borough of Lambeth, 16 Brixton Hill, London SW2 1BL. Or telephone 01-274 7722 Extension 3001. Closing date 26th January, 1983.

As part of Lambeth's Equal Opportunities Policy, applications are welcome from people, regardless of disability, marital status, race or sex.

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Post 1 - To teach specifically to students, DEC to Ordinary level and short term training courses.

Post 2 - To teach Small Business Systems Applications which will include: data processing, word processing, and other software.

The person appointed will have responsibility for the development of the course, and will be involved in the recruitment of students.

Salary scale: £10,000 - £12,000 p.a.

Application forms and further details are available from the Personnel Officer, Kent County Council, Education Committee, 100 High Street, Maidstone, Kent ME1 4JF.

your appointments register

Programmers		Systems Analysts	
NCR/IBM/COBOL to £14K	IBM/ICL to £12K	IBM/ICL to £12K	IBM/ICL to £12K
Insurance - Banking - London - H Counties - N Eng.	Stock Control/Commodity Control	CAD/CAM to £10K	CAD/CAM to £10K
COBOL/PL1/OS/CICS/IMS to £13K	Real time - Modelling - Man - Essex - South West	IBM/BURROUGHS to £10K	IBM/BURROUGHS to £10K
Commercial - H Counties - Midlands - Manchester	Commercial Accountancy - Hampshire	COMMUNICATIONS to £10K	COMMUNICATIONS to £10K
HEWLETT PACKARD to £9K	Systems Programming experience - Middlesex	DEC/CORAL/PASCAL/MASCOT to £10K	DEC/CORAL/PASCAL/MASCOT to £10K
DEC/HF/WANG/DG to £12K	Basic - Cobol - Berks - Surrey	MILITARY SYSTEMS/RADAR to £10K	MILITARY SYSTEMS/RADAR to £10K
Analyst/Programmers		PROCESS CONTROL/IND. AUTOMATION to £10K	PROCESS CONTROL/IND. AUTOMATION to £10K
BURROUGHS/COBOL to £14K		CONSULTANTS/MILITARY/DEFENCE to £10K	CONSULTANTS/MILITARY/DEFENCE to £10K
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IBM/UNIVAC/ASSEMBLER to £12K		PROJECT LEADER to £10K	PROJECT LEADER to £10K
Hardware/Support			
APPLICATIONS ENGINEER to £14K			
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The Appointments Register

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He or she will be selected on the evidence of an established performance in selling data processing and office automation equipment and will be assessed on his or her ability to aggressively implement a marketing and sales plan. Responsibilities will include establishment of a national sales force and participation in the drafting of marketing strategy.

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The operation will be located in the East Berkshire/South East Buckinghamshire/North West Surrey region.

If you require additional information or wish to apply for this post please contact Miss S. J. Sweeney, Secretary/P.A. to Managing Director, Codex (U.K.) Limited, 114/116 Thornton Road, Thornton Heath, CR6 6XB. Tel: 01-889 2101. All applications will be treated in strict confidence.

(2277)

MOTOROLA

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Ring Mike on 01-549 9236 (office) or 01-549 9236 (evenings)

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APPLICATIONS ENGINEER

(REF 2268) £8,400-£12K

PROGRAMMERS

(REF 2269) £5,500-£7K

HAMMERSMITH

A major international group of civil engineering consultants has vacancies for Applications Engineers and Programmers initially for work largely but not wholly confined with maritime, particularly offshore, engineering. Experience is sought in the use or development of the following:

- Computer-aided project management systems eg MIS or Visio
- Relational information reporting systems eg INFO
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Oil industry experience is a particular advantage which will attract appropriate salary supplements. Salary will be related to the experience and qualifications of the selected applicants within the ranges shown. Substantial staff benefits include pension, insurance and private health schemes.

Please apply in writing quoting the reference number and enclosing a brief but comprehensive CV to J. E. Smith, Sir William Halcrow and Partners, Shortlands, Hammersmith, London W6 8BT.

DEC SYSTEM SPECIALISTS/CONSULTANTS

Redkiss is one of the leading RSX software consultants in the U.K. agents and distributors overseas.

We are seeking DEC system specialists with wide experience in system analysis, tuning and on-site problem solving to operate nationally and internationally. In addition to support activities, some design and implementation of new software technology is to be expected. Salary negotiable, dependent on experience.

Current company expansion will provide excellent opportunities for applicants seeking a rewarding position with real growth potential and career development. Successful applicants will become involved in a varied, interesting, flexible work environment and are likely to be based in the West of Scotland.

Contact: REDKISS SOFTWARE LTD., 55 WILSON WAY, ST. THOMAS, SWANSEA, SA1 8AA, 0792 511111

TECHNICAL MANAGER

Small company in S.W. London looking for a dynamic, energetic, and motivated person to -

- organize and motivate a team of permanent and casual programmers writing programs for a wide range of micro
- bring technical innovation and initiative to bear on the company's business

Minimum: 5 years' computing experience with two or more software, some hardware design knowledge, and a proven track record in a similar position.

Salary of £12,000 plus bonus plus share option.

Contact: Peter Laver on 01-278 0122 or send cv to A.B.E. Ltd., London House, 42 Upper Richmond Road West, London W9 1PD

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Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter to the Confidential Reply Supervisor.

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Minimum requirements are for 2 years Cobol programming in a commercial environment. A knowledge of Unix and "C" would be helpful, but is not essential. Excellent career development opportunities exist in the company which has won two Queen's Awards for Export Achievement and has offices in 10 countries throughout the world.

These positions are London based, but opportunities for interesting overseas travel may arise if desired.

Please apply to Trisha Robinson, Personnel Officer, at the address below: (2208)

BIS Software Limited
York House,
199 Westminster Bridge Road,
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Please write or telephone:

Jon Wollidge
Macro Marketing Ltd
Burnley Road, Bury, Lancs. BL1 6LN
Tel: (0534) 52523

SALES BIT

Quality of Management - 38

Mud-slinging will get you nowhere!

THERE is nothing in selling quite so futile as mud-slinging. Whether the target is a competitor, a past employer or an existing colleague, everybody loses when the dialogue gets down to the degrading level of abuse, derision and condemnation.

Such an attack could come in the form of a direct assault on the capability of a product, a sensational revelation of confidential information, the breaking of a personal confidence, the negative criticism of a colleague, or belittling the integrity of a competitor.

Whatever the method employed, there is unlikely to be any gain for anyone, least of all the instigator.

Behind all mud-slinging incidents is the belief that there is some benefit to be gained by the instigator. There is the personal satisfaction of "revealing the truth", "gaining a reprisal", "putting the record straight", and so on, but that is usually short-lived.

There is also the apparent reflected enhancement of the quality of one's product or oneself by "pointing out the faults on the other guy's face". That is self-deluding, for above all, it assumes that others have insufficient perception to identify the truth for themselves. That is patronisation at its worst!

Constructive criticism of competition is acceptable in my book, but full frontal abuse is the best way of destroying the credibility of one's company, one's product and oneself. It is very tempting, when you know that a competitive product is totally inappropriate to "tell it like it is". Don't do it! By all means suggest that, for instance, the client checks the validity of a particular claim, but don't suggest your competitor is lying or that his product is inferior.

After all, the chances are the client knows more about your competitor's shortcomings than you do!

A few weeks ago I saw a piece of public mud-slinging that shows how futile and harmful this sort of behaviour can be. It was the classic disgruntled employee syndrome. The target was a major manufacturer. Shock revelation - computer company going down the tubes, with facts to prove it.

There is nothing more damaging than half-truths and reality presented out of context. I know the company and I knew that the reality was not only nothing like as bad nor were the problems it was facing radically different from those being experienced by its competitors.

Yet anyone reading it would assume the balliffs were already on their way. The effect must have been shocking and demotivating for the company's employees, clients and prospects, and the perpetrator must feel well pleased with himself.

Honour is fulfilled? Of course it isn't! Ego is satisfied, pride is fed - but integrity is destroyed, dignity is degraded. Not a very satisfactory exchange.

In more realistic terms, reprisals can lead to vendettas. The disgruntled employee may well find that the employer he has done down will send a pre-emptive strike to his next employer with the legend "Here's an example of this man's integrity", or "How would you like some publicity like this?" Result, someone who may never work again; a very high price to pay for a brief moment of emotional satisfaction.

The fact is, no one is ever impressed by the individual who announces the shortcomings of others in a derogatory manner. The extent of the harm done to the character of the victim is only exceeded by the damage to the credibility of the one who makes the accusation.

Alan Williams

COURSES

HULL College of Further Education's Micro Centre

provides education training and consultancy in the application of microcomputers in the fields of word and data processing. Courses lined up for this year include Advanced Programming, which puts the emphasis on designing programs for what are described as "real-life problems", and the special techniques required for microcomputer based software. It costs £65 + VAT for eight evenings. A two-day Word Processing Supervisor's course, costing £106 + VAT, aims to introduce the supervisor or senior operator to procedures and routines necessary for the efficient operation of WP systems. Details from the Micro Centre on (0482) 41451.

A SERIES of two day courses

using the Microcomputer financial modelling package is to be held by ADP Network Services in February, March, April and May. The courses comprise half a day of intensive modelling, using Micro-modeller. The courses cost £200 and will be held at ADP's conference centre at 142 Great Portland Street, London W1. The course is suitable for the first-time micro user thinking of buying a system running under CBM, or the existing micro user who wants practical experience of a Winchester disc-based machine using industry standard modelling software. Details: 01-353 0666.

PUZZLE ANSWER

7K is known to produce XXXXXX... when multiplied by the Magic number, so let us consider the case where X = 1.

17 1111... equals 7 times 1111... then we need to divide 1111... by 7 until there is no remainder. This operation leads immediately to the Magic solution, 15873.

The Magic number 37 and (3 times X) is another example of this phenomenon.

